BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 c Edition : 01.07.88

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 349

Injection pump

Pump designation : PES6A900410RS2757 EP type number : 0 410 896 086

Governor

: RSV425...1000A1C2233 Governor design.

: 0 420 232 496 Governer no.

Customer-spec. information

Customer : IVECO-FIAT

Engine : 8065.25.080

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 firing order

Tolerance + - 0 : 0.50 (0.75)

: 0-60-120-180-240-300

Time to cyl. no. : 1

BASIC SETTING

Phasing

1st speed rpm: 1000

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 9.3...9.4

100 s: (9.1...9.6)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 425.0 2nd speed Rack travel in mm: 7.1...7.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 800

Del.quantity : 93.0...96.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.10

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1080...1110

4th rack travel in: 1240

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 25...33

Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 7.2

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 425

Rack travel in mm : 7.10...7.30

Rack travel in mm : 2.00

Speed rpm : 450...510

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 12.10...12.20

2nd speed rpm : 500

Rack travel in m: 12.10...12.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 800 Pressure

Rack travel mm : 12.10...12.20

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 11.90...12.00 2nd pressure hPa : 780

Rack travel in m: 12.00...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 79.0...80.0 1000 s: (77.0...82.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 93.0...103.0 1000 s: (90.0...106.0)

Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 w 1 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 350 Injection pump Pump designation : PES6A100D410RS2754 EP type number : 0 410 806 002 Governor Governor design. : RSV425...1100A202234 : 0 420 232 498 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6076TRW04 1st version kW : 122.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05 : (2.90...3.10) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 10.0...10.2 100 s: (9.8...10.4) Spread cm3 : 0.3100 s: (0.6) rpm : 425.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 : 100.5...102.5 Del.quantity 1000 : (98.5...104.5) cm3 : 3.50 1000 : (5.00) Spread RATED SPEED 1st version Control lever position degrees: 42...50 Testing:

A03

1st rack travel in: 10.60 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1205 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 425 Rack travel in mm: 4.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 425 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 rpm : 570...630 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.60...10.70 2nd speed rpm : 700

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 700
Del.quantity cm3/ : 123.5...126.5 1000 s: (121.0...129.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed : 100 rom Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0)

LOW IDLE

rpm : 425 Speed Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) Spread cm3 : 3.501000 s: (5.50)

Remarks:

Start-of-delivery mark = $12,5^{\circ}$ after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 w 2 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 351 Injection pump Pump designation : PES6A100D410RS2754 EP type number : 0 410 806 002 Governor Governor design. : RSV425...1100A2C2234 -1L : 0 420 232 499 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6076 TRW01 1st version kW : 106.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values _ BEGINNING OF DELIVERY Test pressure, bar: 27...29 A05

: 2.95...3.05 Prestroke mm : (2.90...3.10) Rack travel in mm : 10.50...10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 9.70...9.80 Del.quantity cm3/: 8.9...9.1 100 s: (8.7...9.3) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 425.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Del.quantity : 89.0...91.0 1000 : (87.0...93.0) cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 42...50

Testing:

1st rack travel in: 8.70
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1190...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 425

Speed rpm : 425 Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 425
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.70...9.80
2nd speed rpm : 700
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 700 Del.quantity cm3/ : 110.5...113.5 1000 s: (108.0...116.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70 Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 425 Rack travel in mm : 5.10...5.30

A06

Del.quantity cm3/: 19.0...23.0

1000 s: (16.5...25.5) cm3 : 3.50

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark = 12,5° after start of delivery cyl. 1. rque-control spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 w 3 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 0 400 876 352 Injection pump Pump designation : PES6A100D410RS2754 EP type number : 0 410 806 002 Governor Governor design. : RSV400...1100A2C2204 -4L Governer no. : 0 420 232 500 Customer-spec. information : JOHN DEERE Customer Engine : 6076 ADW-01 1st version kW : 146.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 101 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 27...29 A07

: 2.95...3.05 Prestroke mm : (2.90...3.10) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 12.00...12.10 Del.quantity cm3/: 12.0...12.2 100 s: (11.8...12.4) Spread cm3 : 0.3100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Del.quantity : 120.0...122.0 1000 : (118.0...124.0) Spread cm3 : 3.501000 : (6,00) RATED SPEED 1st version Control lever position degrees: 41...49

Testing:

1st rack travel in: 11.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed rpm : 1210...1220 3rd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400° Rack travel in mm: 4.6 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.00...5.20 Rack travel in mm : 2.00 rpm : 530...590 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.00...12.10 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1145...1155 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0) LOW IDLE Speed rpm : 400 Rack travel in mm : 5.00...5.20 Del.quantity cm3/ : 19.0...23.0 1000 s: (16.5...25.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Start-of-delivery mark = 12,5° after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 b 1 Edition : 15.06.88 Replaces : 14.1.88 Test oil : ISO-4113

Combination no. : 0 401 276 049

Injection pump

Pump designation : PES6A100D410RS3034 EP type number : 0 411 206 016

Governor

Governor design. : RSV600...1100A2C2080

Governer no. : 9 420 234 159

Customer-spec. information

: JOHN DEERE Customer

: 6466 A Engine

1st version kW : 152.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.95...2.05

: (1.90...2.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 12.9...13.1

100 s: (12.7...13.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 600.0 2nd speed Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 2.7...3.1

100 s: (2.5...3.2)

cm3 : 0.6 Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 500

Del.quantity : 129.0...133.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 33...41

Testing:

1st rack travel in: 10.70

rpm : 1145...1155 Speed

A09

2nd rack travel in: 4.00 Speed rpm : 1195...1225

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 15...24

Setting point w/out bumper spring

Speed rpm : 600 Rack travel in mm : 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 600

Rack travel in mm : 5.70...5.90

Rack travel in mm : 2.00

Speed rpm : 630...690

Aneroid/Altitude Compensator Test

1st version

Setting Speed

Speed rpm : 500 Pressure hPa : -

Rack travel mm : 8.60...8.70

Measurement

Speed 1/min: 500

1st pressure hPa : 333

Rack travel in m: 11.55...11.65

2nd pressure hPa : 233_

Rack travel in m: 10.75...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: -

1000 s: (65.0...75.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

A10

Del.quantity cm3/: 170.0...190.0

1000 s: (165.0...195.0) Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1200

Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm: 600

Rack travel in mm: 5.70...5.90

Del.quantity cm3/: 27.0...31.0

1000 s: (25.5...32.5)

1000 s: (25.5...32.5) cm3 : 6.00

Spread cm3 : 6.00 1000 s: (7.50)

Remarks:

: JOHN DEERE # RE23751

Start-of-delivery mark at control-rod travel 10.5 mm and 15^{0} after start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Note remarks Test sheet : GUS 31,8 a3 Edition : 05.07.88 Phasing : 0-45-60-105-120-165-Replaces : 19.12.86 180-225-240-285-300-Test oil : ISO-4113 345 Tolerance + - 0 : 0.50 (0.75) Combination no. : 0 401 830 709 BASIC SETTING Injection pump Pump designation : PE12P13OA12OR\$3094-2 1st speed rpm : 900 EP type number : 0 411 830 705 Governor Rack travel in mm : 8.50...8.60 Governor design. : RQV350...900PA749 Governer no. : 0 421 813 480 Del.quantity cm3/: 18.8...19.1 Customer-spec. information 100 s: (18.4...19.4) Customer : GUASCOR cm3 : 0.6Spread Engine : E318 100 s: (1.0) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Test oil Rack travel in mm : 4.0...4.2 inlet temp. OC : 38...42 Del.quantity cm3/: 2.2...2.8 100 s: (1.8...3.2) cm3 : 1.0 Overflow valve Spread : 1 417 413 025 100 s: (1.4) Inlet press., bar : 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 350 Opening : 1.50...1.80 travel mm pressure, bar : 207...210 2nd speed rpm : 750 travel mm : 5.40...5.60 Orifice plate 3rd speed rpm : 900 diameter mm : 0,8 : 7.60...7.80 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 074 Control-lever position Degree: -1 Outside diameter rpm : 940 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x1000 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values

1st version

Speed rpm : 900

Del.quantity : 188.0...191.0 1000 : (184.5...194.5)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

A11

Insp. values in parentheses

: 3.60...3.70

: (3.55...3.75)

Set equal delivery quant.

Rack travel in mm : 9.00...12.00

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Control lever position degrees: 61...69

Testing:

1st rack travel in: 7.50 Speed rpm : 940...950 2nd rack travel in: 4.00
Speed rpm: 970...1000
4th rack travel in: 1100
Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever position degrees: 6...14

Testing:

Speed rpm : 100 Minimum rack trave: 5.60 Speed rpm : 350 Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

Speed rpm : 355...455

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.50 Speed rpm : 940...950

;

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 20,9 z : 16.05.88 Edition Replaces Test oil : ISO-4113 Combination no. : 0 401 840 108 Injection pump Pump designation : PE12P110A520/4LS849 EP type number : 0 411 810 041 Governor Governor design. : RQV250...1050PA889 Governer no. : 0 421 813 696 Customer-spec. information Customer : MAN Engine : D2842ME 1st version kW : 305.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

x Length mm per values ____ BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

345

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 12.8...13.1

100 s: (12.6...13.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 6.5...6.7 Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30 2nd speed rpm : 800

travel mm : 5.30...5.70

3rd speed rpm: 1050 travel mm : 7.50...7.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 128.5...131.5 Del.quantity 1000 : (126.0...134.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

A13

ist version Control lever

position degrees: 57...65

Testing:

1st rack travel in: 10.30

Speed rpm: 10.30
2nd rack travel in: 4.00
Speed rpm: 1180...1210
4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...151

Testing:

rpm : 100 Speed Minimum rack trave: 8.10

Speed rpm: 250 Rack travel in mm: 6.50...6.70

CONSTANT REGULATION

Speed rpm : 385...510

START CUT-OUT

Speed 1/min: 190 (210)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1090...1100

Remarks:

APPLICATION

Rail car

Note remarks

Test sheet : KHD 19,2 b **Edition** : 16.05.88 : 12.9.86 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 840 733

Injection pump

Pump designation : PE12P110A92GLS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1200PAB03 Governer no. : 0 421 801 350

Customer-spec. information Customer : KHD

Engine : BF12L513C

: 386.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9- 8- 5- 2-

A15

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - D : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.5

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 1.5...2.1

100 s: (-)

cm3 : 0.7Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 167.0...169.0 Del.quantity 1000 : (164.0...172.0) cm3 : 5.00 1000 : (8.00)

Spread

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1245...1260

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.6

Testing:

Speed rpm: 100
Minimum rack trave: 8.00
Speed rpm: 300
Rack travel in mm: 6.50...6.70
Rack travel in mm: 2.00
Speed rpm: 395...435

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Remarks:

Note remarks

Test sheet : KHD 19,2 c Edition : 6.11.86

Replaces Test oil

: ISO-4113

Combination no. : 0 401 840 755

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQV750PA823 Governer no. : 0 421 813 573

Customer-spec. information Customer : KHD

Engine

: BF12L513C

1st version kW : 263.0

Rated speed

: 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm

: 6,00x1,50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-9-8-5-2-11-10-3-

A17

Phasing

: 0-15-60-75-120-135-180-195-240-255-300-

315

Tolerance + - 0 : 0.50(0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 300

Rack travel in mm : 6.60...6.80

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.7 Spread

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 156.0...158.0

1000 : (153.0...161.0)

cm3 : 5.0 Spread

1000 : (8.0)

RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755

2nd rack travel in: 4.00 Speed rpm: 780...787

4th rack travel in: 820

rpm : 0.00...1.00 Speed

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: KHD 19,2 d Test sheet : 20,05,88 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 758

Injection pump

Pump designation : PE12P110A920LS3185

EP type number : 0 411 810 712

Governor

Governor design. : RQV425...900PA814

Governer no. : 0 421 813 558

Customer-spec, information Customer : KHD

Engine : F12L513

1st version kW : 232.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.10...3.20 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

A19

Prestroke mm

: 1- 4- 9- 8- 5- 2-11- 10- 3- 6- 7- 12 Firing order

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 9.4...9.6

100 s: (9.1...9.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 425.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 425

: 1.30...1.70 travel mm

2nd speed rpm : 450

travel mm : 2.10...2.70 3rd speed rpm : 550

travel mm : 3.40...4.00

4th speed rpm: 950 travel mm : 8.40...8.60

5th speed rpm: 1000

travel mm : 9.20...9.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 950

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Del.quantity : 94.0...96.0

1000 : (91.0...99.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.40 Speed rpm : 940...950

2nd rack travel in: 4.00 Speed rom: 980...

Speed rpm : 980...1010 4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 22...30

Testing:

Speed rpm : 100 Minimum rack trave: 8.80 Speed rpm : 425

Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 425...490

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 10.40...10.50

2nd speed rpm : 550

_ Rack travel in m: 10.70...10.80

3rd speed rpm : 675

Rack travel in m: 10.70...10.80

4th speed rpm : 750

Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 675

Del.quantity cm3/: 96.0...100.0

1000 s: (94.0...102.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 940...950

STARTING FUEL DELIVERY

A20

Speed rpm_ : 100

Del.quantity cm3/: 135.0...165.0

1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : KHD 19,2 b1 Edition : 05.08.88

Replaces

Test oil : ISO-4113

Combination no. : 0 401 840 762

Injection pump

Pump designation : PE12P110A920LS3173

EP type number : 0 411 810 708

Governor

Governor design. : RQ300/1150PA894 Governer no. : 0 421 801 443

Customer-spec. information Customer : KHD

: BF12L513 Engine

1st version kW : 353.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

Phasing

: 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

Spread cm3 : 0.5

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.5...2.1

100 s: (-) cm3 : 0.7Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 750

149.0...151.0 1000 : (146.0...154.0) cm3 : 5.00 1000 : (8.00) Del.quantity

Spread

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1195...1210

2nd rack travel in: 4.00

rpm : 1240...1270 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300° Rack travel in mm: 6.6

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 300

Rack travel in mm : 6.50...6.70

Rack travel in mm : 2.00

Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.00...12.10

2nd speed rpm : 700

Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 750 Pressure

Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 430

Rack travel in m: 11.70...11.80

3rd pressure hPa : 350

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 450
Del.quantity cm3/: 123.0...127.0
1000 s: (121.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : FIA 13,8 a4 Phasing : 0-60-120-180-240-300 Edition : 01.09.88 Replaces : 7.83 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. Combination no. : 0 401 846 225 BASIC SETTING Injection pump Pump designation : PE6P120A720RS167 1st speed rpm : 1100 EP type number : 0 411 826 053 Governor Rack travel in mm : 11.10...11.20 Governor design. : R0225/1100PA118R Governer no. : 0 421 801 027 Del.quantity cm3/: 17.0...17.3 Customer-spec. information 100 s: (16.7...17.6) Customer : FIAT Spread cm3 : 0.5Engine : 221 A 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 225.0 Test oil Rack travel in mm: 7.5...7.7 inlet temp. OC : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1175 Opening : 7.50...7.70 travel mm pressure, bar : 207...210 rpm : 1000 2nd speed : 5.90...6.10 travel mm Orifice plate rpm : 500 3rd speed diameter mm : 0,8 : 5.90...6.10 travel mm 4th speed rpm : 300 travel mm : 2.80...3.40 Test lines : 1 680 750 067 rpm : 225 5th speed travel mm : 1.40...1.90 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 600 Insp. values in parentheses Rack travel in mm: 15.60...16.40 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 rpm : 1100 Speed : 170.0...173.0 Del.quantity Prestroke mm 1000 : (167.0...176.0) : 2.00...2.10 : (1.95...2.15) : 5.00 Spread cm3 Rack travel in mm : 9.00...12.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.10

Speed rpm : 1145...1160 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 7.6

Testing:

Speed rpm : 100 Minimum rack trave: 9.10

Speed rpm: 225
Rack travel in mm: 7.50...7.70
Rack travel in mm: 2.00
Speed rpm: 365...405

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1145...1160

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 a : 05.08.88 Edition Replaces : 12.9.86 Test oil : ISO-4113

Combination no. : 0 401 846 460

Injection pump

Pump designation : PE6P120A320RS436 EP type number : 0 411 826 118

Governor

Governor design. : RQ750PA595 Governer no. : 0 421 801 148

Customer-spec. information Customer : RVI

Engine : MID (S) 062030

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

A25

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4) cm3 : 0.8 Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 163.0...165.0 Del.quantity

1000 : (160.0...168.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.00

Speed rpm : 750...755

2nd rack travel in: 4.00 Speed rpm: 776...789

4th rack travel in: 900

rpm : 0.00...1.00 Speed

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11,9 h Edition : 05.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 482 Injection pump Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075 Governor Governor design. : RQV250...1100PA680 Governer no. : 0 421 813 374 Customer-spec. information Customer : ENASA Engine : 96 T1 BX TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1080 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 21.5...21.7 100 s: (21.2...22.0) Spread cm3 : 0.5100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.00...1.40 travel mm rpm : 350 2nd speed : 1.70...2.30 travel mm 3rd speed rpm : 650 : 4.00...4.60 travel mm rpm : 1145 : 8.30...8.50 4th speed travel mm 5th speed rpm : 1225 travel mm : 9.20...9.60 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1130 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1080 Aneroid pressure h: 900 Del.quantity : 215.0...217.0 1000 : (212.0...220.0)

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm: 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 Speed rpm : 250

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...370 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1080

Rack travel in m: 11.00...11.10

2nd speed rpm : 650

Rack travel in m: 11.50...11.70

3rd speed rpm : 850

Rack travel in m: 11.20...11.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 LOW Pressure hPa : 900

: 11.30...11.50 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.70...10.10

2nd pressure hPa : 415

Rack travel in m: 11.00...11.10
3rd pressure hPa : 300

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 650 Del.quantity cm3/ : 185.0...191.0 1000 s: (182.0...194.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 11,6 a : 08.06.88 Edition : 29.4.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 494 Injection pump Pump designation : PE6P100A720RS473 EP type number : 0 411 806 196 Governor Governor design. : RQ300/1100PA269-1 Governer no. : 0 421 801 237 Customer-spec. information Customer : DAIMLER-BENZ Engine : OM 355

1st version kW : 177.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Over flow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.1...8.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm

: 2.30...2.60 2nd speed rpm : 600

travel mm : 6.90...7.10

3rd speed rpm : 1150 travel mm : 7.30...7.70

4th speed rpm : 1200

travel mm : 10.00...10.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 13.40...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

Del.quantity : 123.0...129.0)

cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Setting point: Speed rpm : 600 Rack travel in mm: 13.6 Testing: 1st rack travel in: 11.70 Speed rpm : 1145...1160 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300° Rack travel in mm: 6.1 Testing: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Speed Rack tradel in mm : 6.00...6.30 Rack travel in mm : 2.00 rpm : 350...390 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600
Del.quantity cm3/ : 115.0...119.0 1000 s: (112.5...121.5) Spread cm3 : 5.001000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rpm : 1145...1160 STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

B01

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DAF 11,6 y2 Test sheet : 01.07.88 Edition Replaces : 10.85 Test oil : ISO-4113 Combination no. : 0 401 846 511 Injection pump Pump designation : PE6P12OA32ORS415-1 EP type number : 0 411 826 123 Governor Governor design. : RQ250/1000PA417-4 Governer no. : 0 421 801 287 Customer-spec. information Customer : DAF Engine : DKZ 1160 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzie holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm: 850 Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 20.6...20.8 100 s: (20.3...21.1) Spread cm3 : 0.5100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 550 Rack travel in mm : 15.60...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 850 Speed Aneroid pressure h: 700 : 206.0...208.0 Del.quantity 1000 : (203.0...211.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm : 550 Rack travel in mm: 16.0 Testing: 1st rack travel in: 11.50 rpm : 1035...1050 Speed 2nd rack travel in: 4.00 Speed rpm : 1100...1130 4th rack travel in: 1200 Speed rpm : 0.00...1.00

Firing order

: 1-5-3-6-2-4

802

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 2.80...2.90

: (2.75...2.95)

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 7.40

Speed rpm : 250 Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

rpm : 450...490 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.70...12.80

2nd speed rpm : 990

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 12.50...12.60

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 340

Rack travel in m: 11.80...11.90

3rd pressure hPa : 280

Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/: 140.0...142.0

1000 s: (137.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1035...1050 Speed

STARTING FUEL DELIVERY

803

Speed rpm : 100 Del.quantity cm3/ : 305.0...345.0 1000 s: (305.0...345.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.40...6.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 7,1 b 1 : 05.08.88 Edition Replaces : 28.11.86 Test oil : ISO-4113 Combination no. : 0 401 846 515 Injection pump Pump designation : PE6P110A320RS494 EP type number : 0 411 816 162 Governor Governor design. : RQV300...1100PA435-1 Governer no. : 0 421 813 496 Customer-spec. information Customer : VOLVO Engine : TD 71G 1st version kW : 147.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15)

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Prestroke mm

Phasing : 0-60-120-180-240-300 Tolerance + - 0: 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 12.2...12.4 100 s: (11.9...12.7) Spread cm3 : 0.4100 s: (0.8) rpm : 300.0 2nd speed Rack travel in mm: 4.3...4.5 Del.quantity cm3/: 1.2...1.6 100 s: (-) Spread cm3 : 0.3 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.40...1.50 2nd speed rpm : 420 : 2.50...2.90 travel mm 3rd speed rpm: 800 travel mm : 4.80...5.10 4th speed rpm : 1150 : 8.10...8.30 travel mm 5th speed rpm: 1220 : 8.90...9.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1170 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000 Del.quantity : 122.0...124.0 1000 : (119.0...127.0)

Firing order : 1-5-3-6-2-4

604

Spread cm3 : 4.00

1000 : (8,00)

RATED SPEED

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.90 Speed rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1220...1250 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed rpm : 100 Minimum rack trave: 5.80 Speed rpm : 300

Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 300...470

Aneroid/Altitude Compensator Test

1st version

Setting

Speed ` rpm : 500 Pressure hPa : 1000

Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.00

2nd pressure hPa : 510

Rack travel in m: 11.70...11.80

3rd pressure hPa : 290

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm_ : 700 Speed

Del.quantity cm3/: 87.0...89.0

1000 s: (84.0...92.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 150.0...190.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 12.0...16.0

Spread cm3 : 3.00 1000 s: (6.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : VOL 7,1 a 5 : 0-60-120-180-240-300 Phasing Edition : 2.9.88 Tolerance + - 0 : 0.50(0.75) Replaces Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 531 BASIC SETTING Injection pump 1st speed rpm : 700 Pump designation : PE6P110A320R\$483-5 EP type number : 0 411 816 171 Rack travel in mm : 12.40...12.50 Governor Governor design. : RQV250...1200PA499-4 Del.quantity cm3/: 12.9...13.1 Governer no. : 0 412 813 576 100 s: (12.6...13.4) Customer-spec. information Customer : VOLVO Spread cm3 : 0.4Engine : TD71FC 100 s: (0.75) 1st version kW : 153.0 2nd speed rpm : 250 Rack travel in mm : 5,30...5.50 Rated speed : 2400 Del.quantity cm3/: 1.6...2.0 TEST BENCH REQUIREMENTS 100 s: (-) cm3 : 0.3Spread Test oil 100 s: (6.0) inlet temp. OC : 38...42 (B) Setting of injection pump Overflow valve with governor : 1 417 413 025 GUIDE SLEEVE TRAVEL Inlet press., bar : 1.50 rpm : 250 1st speed : 1.10...1.30 ravel mm Test nozzle holder rpm : 380 2r.d speed assembly : 0 681 343 009 travel mm : 2.30...2.60 rpm : 500 3rd speed Opening : 2.90...3.30 travel mm pressure, bar : 172...175 4th speed rpm : 1260 : 7.70...7.90 travel mm rpm : 1400 5th speed Test lines : 1 680 750 015 travel mm : 9.00...9.30 Outside diameter GUIDE SLEEVE POSITION x Wall thickness Control-lever position x Length mm : 6.00x1.50x600 Degree: -1 Speed rpm : 1330 (A) Injection pump setting values Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values _____ 1st version BEGINNING OF DELIVERY Speed rpm : 700 Test pressure, bar: 25...27 Aneroid pressure h: 900 Del.quantity : 129.0...131.0 1000 : (126.0...134.0) Prestroke mm : 3.00...3.10 : (2.95...3.15) Spread cm3 : 4.0 Rack travel in mm : 9.00...12.00 1000 : (7.5)

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 11.40

Speed rpm : 1260...1270

2nd rack travel in: 4.00

Speed rpm : 1400...1430

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed rpm : 100

Minimum rack trave: 6.80

Speed rpm: 250 Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...480 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 Speed hPa : 900 Pressure

Rack travel mm : 12.40...12.50

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 560

Rack travel in m: 12.10...12.20

3rd pressure hPa : 300

Rack travel in m: ?

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

1000 s: (69.0...78.0)

Spread cm3:-

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0

1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 16.0...20.0

1000 s: (-)

Spread cm3 : 3.0

1000 s: (6.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : VOL 10,0 v3 Phasing : 0-60-120-180-240-300 Edition : 12.08.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 866 BASIC SETTING Injection pump Pump designation : PE6P110A320RS3080 1st speed rpm: 700 EP type number : 0 411 816 722 Governor Governor design. : RQV250...850PA657-9 Governer no. : 0 421 813 566 Customer-spec. information Customer : VOLVO Spread Engine : TD102FG0 1st version kW : 205.0 Rated speed : 1700 TEST BENCH REQUIREMENTS Test oil cm3 : 0.3Spread inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 with governor Inlet press., bar : 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Test nozzle holder travel mm assembly : 0 681 343 009 2nd speed rpm : 350 travel mm Opening 3rd speed rpm : 700 pressure, bar : 172...175 travel mm rpm : 850 4th speed travel mm Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 x Length mm : 6.00x1.50x600 rpm : 935 Speed (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ 1st version Speed rpm : 700 BEGINNING OF DELIVERY Aneroid pressure h: 900 Test pressure, bar: 25...27 Del.quantity : 3.00...3.10 Prestroke mm Spread : (2.95...3.15)

Rack travel in mm : 9.00...12.00

608

Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 18.5...18.7 100 s: (18.2...19.0) cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 3.8...4.0 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1) 100 s: (0.6) (B) Setting of injection pump : 1.00...1.40 : 2.20...2.80 : 6.40...6.60 : 6.70...6.90 Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP : 185.0...187.0 1000 : (182.0...190.0) cm3 : 4.00 1000 : (7.50)

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 12.70

rpm : 890...900 Speed 2nd rack travel in: 4.00

Speed rpm : 955...985

4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 3...11

Testing:

rpm : 100 Speed Minimum rack trave: 5.40

rpm : 250 Speed

Rack travel in mm : 3.80...4.00

Rack travel in mm : 2.00

rpm : 285...345 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500 hPa : 900 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.00

2nd pressure hPa : 530

Rack travel in m: 13.50...13.60

3rd pressure hPa : 120

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm_ : 700 Speed

Del.quantity cm3/: 132.0...135.0

1000 s: (129.5...137.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 890...900

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0

1000 s: (160.0...190.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 3.80...4.00 Del.quantity cm3/: 15.0...19.0

1000 s: (12.5...21.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 10,0 v4 Edition : 12.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 867 Injection pump Pump designation : PE6P110A320R\$3080 EP type number : 0 411 816 722 Governor Governor design. : RQV250...1050PA657-24 Governer no. : 0 421 813 674 Customer-spec. information Customer : VOLVO Engine : TD102FCQ 1st version kW : 220.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses

x Length mm Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 25...27 Prestroke mm

: 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 3.8...4.0 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed

rpm : 250 travel mm : 1.00...1.40

2nd speed rpm : 550

travel mm : 4.90...5.50

3rd speed rpm : 700 travel mm : 6.40...6.60

: 1050 4th speed rpm

travel mm : 7.20...7.40

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1120

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

1000 : (185.0...187.0 1000 : (182.0...190.0) Del.quantity

Spread cm3 : 4.00 1000 : (7.50)

B10

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 12.70

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 4...12

Testing:

Speed rpm : 100 Minimum rack trave: 5.40

Speed rpm : 250

Rack travel in mm : 3.80...4.00

Rack travel in mm: 2.00

rpm : 300...360 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 13.70...13.80

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 610

Rack travel in m: 13.50...13.60

3rd pressure hPa : 120

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 119.0...122.0

1000 s: (116.5...124.5)

BREAKAWAY

1st version

B11

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (160.0...190.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.80...4.00 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : PEN 6.1 Q : 01.09.88 Test sheet Edition Replaces : 5.6.87 Test oil : ISO-4113 Combination no. : 0 401 876 327 Injection pump Pump designation : PE6P110A320RS499 EP type number : 0 411 816 169 Governor Governor design. : RSV325...1400P2A374-: 0 421 833 220 Governer no. Customer-spec. information Customer : VOLVO-PENTA Engine : TAMD61A 1st version kW : 220.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1000 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 11.4...11.6 100 s: (11.1...11.9) Spread cm3 : 0.4 100 s: (0.7) 2nd speed rpm : 325.0 Rack travel in mm : 4.1...4.3 Del.quantity cm3/: 1.1...1.5 100 s: (-) cm3 : 0.3 Spread 100 s: (0.6) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 3.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 900 Del.quantity : 114.0...116.0 1000 : (111.0...119.0) cm3 : 4.00 1000 : (7.50) Spread RATED SPEED 1st version Control lever position degrees: 47...55

Testing: 1st rack travel in: 9.80 rpm : 1420...1430 Speed

2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1620 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 13...21 Setting point w/out bumper spring rpm : 325° Rack travel in mm: 3.7 Speed rpm : 325 Rack travel in mm : 4.10...4.30 Rack travel in mm : 2.00 rpm : 380...440 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 11.10...11.20 2nd speed rpm : 600 Rack travel in m: 11.10...11.40 3rd speed rpm : 375 Rack travel in m: 11.60...11.70 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 900 Speed Pressure

Rack travel mm : 10.80...10.90 Measurement 1/min : 500 Speed

1st pressure hPa : -Rack travel in m: 8.10...8.30 2nd pressure hPa : 550 Rack travel in m: 10.50...10.60

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 rpm : 1400 Del.quantity cm3/: 116.0...122.0 1000 s: (115.0...125.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 48.0...52.0 1000 s: (45.0...55.0)

BREAKAWAY

1st version

613

1mm rack travel less than

full load rack tr: 9.80 Speed rpm : 1420...1430

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...165.0

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.10...4.30 Del.quantity cm3/: 11.0...15.0 Spread cm3: 3.00 1000 s: (6.00)

Remarks:

APPLICATION Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 d2 Edition : 19.08.88

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 034

Injection pump

Pump designation : PES6P110A720RS296

Governor

Governor design. : RSV400...900P0/429DR

Customer-spec. information Customer : JOHN DEERE

Engine : 6619 T

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6,00x3,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,75...2,85

: (2,70...2,90)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0,5(0,75)

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 10,60

Del.quantity cm3/: 12,2...12,6

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 400 2nd speed Rack travel in mm: 6,00 Del.quantity cm3/: 1,9...2,3 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 600

1000 : (-) Del.quantity

cm3 : 4.0 Spread 1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 38...46

Testing:

1st rack travel in: 9,60 Speed rpm : 950 2nd rack travel in: 6,40

rpm : 1000 Speed

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 6,70

```
Testing:
 Speed
            rpm : 100
 Minimum rack trave: 19,00
          rpm : 400
 Rack travel in mm: 6,00
 Rack travel in mm : 2,00
Speed rpm : 470...530
 TORQUE CONTROL
 Torque control curve - 1st version
 1st speed rpm : 900
  Rack travel in m: 10,60
 2nd speed rpm : 650
   Rack travel in m: 11,30
FUEL DELIVERY CHARACTERISTICS
 1st version
Aneroid pressure h: 600
             rpm : 650
Speed
Del.quantity cm3/: 1327.0...143.0
              1000 s: (-)
Aneroid pressure h: -
Speed    rpm : 550
Del.quantity cm3/ : 137.0...143.0
              1000 s: (-)
Spread
              cm3 : 0.6
              1000 s: (-)
BREAKAWAY
1st version
1mm rack travel less than
 full load rack tr: 9.60
            rpm : 945...955
Speed
STARTING FUEL DELIVERY
Speed
                  : 100
             rpm
Del.quantity cm3/: 180.0...200.0
1000 s: (-)
HIGH IDLE
1st version
Speed
             rpm : 1000
Del.quantity cm3/: 47,0...57,0
1000 s: (-)
LOW IDLE
Speed    rpm : 400
Del.quantity cm3/ : 19,0...23,0
    1000 s: (-)
Remarks:
```

B15

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : HAN 18,2 d Edition : 01.07.88 Replaces Test oil : ISO-4113 Combination no. : 0 402 649 802 Injection pump Pump designation : PE10P120A520L87811 EP type number : 0 412 629 802 Governor Governor design. : RQV250...1150PA860 Governer no. : 0 421 813 626 Customer-spec. information Customer : MAN Engine : D 2840 LX 1st version kW : 603.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY Test pressure, bar: 25...27

per values

Prestroke mm : 4.90...5.00 : (4.85...5.05) Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1- 8-- 6- 3- 5- 2 Firing order Phasing : 0-45-72-117-144-189-216-261-288-333 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 10 BASIC SETTING 1st speed rpm: 1150 Rack travel in mm : 13.30...13.40 Del.quantity cm3/: 28.4...28.6 100 s: (28.1...28.9) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 500.0 Rack travel in mm : 8.7...8.9 Del.quantity cm3/: 14.1...14.7 100 s: (13.8...15.0) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 1.00...1.40 2nd speed rpm : 750 : 5.90...6.50 travel mm 3rd speed rpm : 1150 travel mm : 8.40...8.60 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1150 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1150 Aneroid pressure h: 1300 Del.quantity : 284.0...286.0 1000 : (281.0...289.0) Spread cm3 : 5.001000 : (9,00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 12.30

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

Speed rpm : 1345...1375

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 8.90

Speed rpm : 250
Rack travel in mm : 7.30...7.50

Rack travel in mm : 2.00

Speed rpm : 410...470

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1300 Speed Pressure

Rack travel mm : 13.30...13.40

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 270

Rack travel in m: 9.20...9.30

3rd pressure hPa : 790

Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0**
 1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 500 * Rack travel in mm : 7.20...7.40

Del.quantity cm3/: <0

2nd version

Speed rpm : 500**
Rack travel in mm : 8.00...8.20
Del.quantity cm3/ : 10.0...130.0
1000 s: (-)

LOW IDLE

rpm : 250**

Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 52.0...60.0 1000 s: (-)

Remarks:

* applies to cylinders 1, 2, 3, 7 and 9
** applies for cylinders 4, 5, 6, 8 and 10

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : RVI 8,8 K 2 Phasing : 0-60-120-180-240-300 Edition : 13.06.88 Replaces : 25.03.88 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 122 rpm: 1400 1st speed Injection pump Pump designation : PES6MW100/320RS1016 Rack travel in mm : 11.10...11.20 EP type number : 0 413 406 010 Governor Del.quantity cm3/: 9.1...9.3 Governor design. : RQV300...1400MW25-1 Governer no. : 0 420 083 039 100 s: (8.9...9.5) Customer-spec. information Spread cm3 : 0.3Customer 100 s: (0.6) : MIDRO6.02-12 Engine 2nd speed rpm : 300.0 1st version kW : 125.0 Rack travel in mm : 6.20...6.30 Del.quantity cm3/: 0.9...1.3 Rated speed : 2800 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS cm3 : 0.3 Spread 100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL 1st speed rpm : 1475 : 8.50...8.90 Inlet press., bar: 1.50 travel mm 2nd speed rpm : 1350 Test nozzle holder travel mm : 7.60...7.80 assembly : 0 681 343 009 3rd speed rpm : 500 : 3.00...3.40 travel mm Opening 4th speed rpm : 300 : 173...176 pressure, bar travel mm : 1.10...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1400 x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values

1st version Speed rpm : 1400 Aneroid pressure h: 500 Del.quantity : 91.5...93.5 1000 : (89.5...95.5) cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00

B18

1st version Control lever position degrees: 58...66 Testing: 1st rack travel in: 10.10 rpm : 1455...1465 Speed 2nd rack travel in: 4.00 Speed rpm : 1575...1605 4th rack travel in: 1700 rpm : 1.00...0.00 Speed LOW IDLE 1 Control lever position degrees: 8...16 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Speed rpm : 300 Rack travel in mm : 5.90...5.80 Rack travel in mm : 2.00 Speed rpm : 490...550 Speed rpm : 200 Maximum rack trave: 7.50 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 500 Speed rpm Pressure Rack travel mm : 11.10...11.20 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 9.80...9.70 2nd pressure hPa : 200 Rack travel in m: 10.30...10.20 3rd pressure hPa : 230 Rack travel in m: 10.90...10.70 START CUT-OUT 1/min : 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 500 rpm_ : 900

1000 s: (85.5...93.5)

Del.quantity cm3/: 87.5...91.5

Aneroid pressure h: -

cm3 : 5.001000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 Speed rpm : 1455...1465 STARTING FUEL DELIVERY

Del.quantity cm3/: 94.0...104.0 1000 s: (91.0...107.0)

LOW IDLE

Remarks:

Speed rpm : 300 Rack travel in mm : 6.30...6.20 Del.quantity cm3/: 9.5...13.5 1000 s: (7.0...16.0) cm3 : 3.50Spread

1000 s: (5,50)

Start-of-delivery mark is 8° after start of delivery with control-rod travel = 10.5 mm.

B19

Speed

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : MB 6.0 D 11 : 01.07.88 Test sheet Edition Phasing : 0-60-120-180-240-300 Replaces : 24.06.88 Test oil : ISO-4113 Tolerance + - 0 : 0.50 (0.75) Combination no. : 0 403 446 145 BASIC SETTING Injection pump 1st speed rpm : 1300 Pump designation : PES6MW100/720RS1114-Rack travel in mm : 11.00...11.10 EP type number : 0 413 406 111 Governor Del.quantity cm3/ : 7.7...7.9 Governor design. : RQV300...1300MW48 Governer no. : 0 420 083 066 100 s: (7.5...3.1) Customer-spec. information Spread cm3 : 0.3Customer : DB 100 s: (0.6) Engine : 0M366A 2nd speed rpm : 300.0 Rack travel in mm: 7.8...7.9 1st version kW : 125.0 Rated speed : 2600 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 Inlet press., bar: 1.50 : 9.50...9.90 travel mm rpm : 1350 2nd speed Test nozzle holder travel mm : 8.50...8.70 assembly : 0 681 343 009 rpm : 450 3rd speed travel mm : 2.40...3.00 Opening 4th speed rpm : 300 pressure, bar : 172...175 : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter Speed rpm : 1330 x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses

1st version Speed rpm : 1300 Del.quantity : 77.0...79.0 1000 : (75.0...81.0) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

B20

Set equal delivery quant.

: 3.70...3.80 : (3.65...3.85)

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Prestroke mm

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.00

Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1430...1460 Speed

4th rack travel in: 1520

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.8

Testing:

Speed rpm : 100 Minimum rack trave: 9.40 rpm : 300 Speed

Rack travel in mm : 7.80...7.90

Rack travel in mm : 2.00

rpm : 500...560 Speed

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 11.00...11.10

2nd speed rpm : 700

Rack travel in m: 12.10...12.20

3rd speed rpm : 720

Rack travel in m: 12.10...12.20

4th speed rpm : 800

Rack travel in m: 11.80...12.00 5th speed rpm : 900

Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 74.5...77.5
1000 s: (72.0...80.0)
Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 7.80...7.90 Del.quantity cm3/: 9.0...13.0

1000 s: (7.0...15.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

B21

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB 6,0 D 9 Phasing : 0-60-120-180-240-300 Edition : 16.05.88 Replaces : 04.86 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 158 1st speed rpm : 1300 Injection pump Pump designation : PES6MW100/720RS1131 Rack travel in mm: 12.10...12.20 EP type number : 0 413 406 123 Governor Del.quantity cm3/: 9.5...9.7 Governor design. : RQV300...1300MW50-1 Governer no. : 0 420 083 089 100 s: (9.3...9.9) Customer-spec. information Spread cm3 : 0.3Customer : DB 100 s: (0.6) Engine : 0M 366 LA rpm : 300.0 2nd speed 1st version kW : 150.0 Rack travel in mm: 6.1...6.2 Rated speed : 2600 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 Inlet press., bar: 1.50 : 9.40...10.20 travel mm 2nd speed rpm : 1350 Test nozzle holder travel mm : 8.50...8.70 assembly : 0 681 343 009 3rd speed rpm : 450 u avel mm : 2.60...2.80
4th speed rpm : 300
travel mm Opening pressure, bar : 172...175 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter rpm : 1340 Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00x1.50x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1300 Speed per values ____ Aneroid pressure h: 700 Del.quantity : 95.0...97.0 1000 : (93.0...99.0) BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread cm3 : 3.501000 : (6.00)

RATED SPEED

. . .

Prestroke mm

: 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

822

1st version Control lever position degrees: 48...56 Testing:

1st rack travel in: 11.10 rpm : 1340...1350 Speed

2nd rack travel in: 4.00 Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.1

Testing:

rpm : 100 Speed Minimum rack trave: 7.60 rpm : 300

Rack travel in mm : 6.10...6.20

CONSTANT REGULATION

rpm : 350...550 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed Pressure hPa : -

Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 170

Rack travel in m: 10.80...10.90

2nd pressure hPa : 225

Rack travel in m: 11.70...12.00

3rd pressure hPa : 700

Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 600

Del.quantity cm3/: 80.0...83.0

1000 s: (77.5...85.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: rpm : 500

Del.quantity cm3/: 50.5...52.5

1000 s: (48.5...54.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.10...6.20 Del.quantity cm3/: 9.0...13.0 1000 s: (7.0...15.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R 1 Edition : 06.04.88 Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 160 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm : 800 Governor Governor design. : RQV350...1200MW64 Rack travel in mm : 11.80...11.90 Governer no. : 0 420 083 090 Del.quantity cm3/: 10.8...11.0 Customer-spec. information Customer : NAVISTAR 100 s: (10.6...11.2) Engine : DTA-466C Spread cm3 : 0.31st version kW : 157.0 100 s: (0.6) : 2400 Rated speed 2nd speed rpm : 350.0 TEST BENCH REQUIREMENTS Rack travel in mm: 5.9...6.0 Del.quantity cm3/: 1.8...2.2 Test oil 100 s: (1.5...2.4) inlet temp. OC : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 assembly : 1 688 901 016 travel mm : 8.80...9.20 2nd speed rpm : 1250 Opening : 7.90...8.10 travel mm pressure, bar : 207...210 3rd speed rpm : 500 travel mm : 2.60...3.20 4th speed rpm : 350 Orifice plate diameter mm : 0.5 travel mm : 1.30...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1380 x Wall thickness Rack travel in mm : 6.70...9.30 x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

1st version Control lever

position degrees: 43...48

Testing:

1st rack travel in: 10.50

Speed rpm : 1260...1280 2nd rack travel in: 4.00

rpm : 1375...1385

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 5.9

Testing:

Speed ' rpm : 100

Minimum rack trave: 9.00 Speed rpm : 350

Rack travel in mm : 5.90...6.00

CONSTANT REGULATION

rpm : 370...450 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 11.80...11.90

2nd speed rpm : 1200

Rack travel in m: 11.50...11.60

3rd speed rpm : 1050

Rack travel in m: 11.60...11.80

4th speed rpm : 1150

Rack travel in m: 11.50...11.60

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed L DW

Pressure hPa : 130

Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 240

Rack travel in m: 11.40...11.70

3rd pressure hPa : 800

825

Rack travel in m: 11.80...11.90

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 1200

Del.quantity cm3/: 107.0...111.0 1000 s: (105.0...113.0)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 85.5...87.5 1000 s: (83.5...89.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.90...6.00

Del.quantity cm2': 18.0...22.0

1000 s: (15.5...24.5) cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 Prestroke mm : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R 7 Edition : 06.04.88 Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 161 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1134 EP type number : 0 413 406 125 1st speed rpm: 800 Governor Governor design. : RQV350...1200MW46-1 Rack travel in mm : 12.80...12.90 Governer no. : 0 420 083 091 Del.quantity cm3/: 12.1...12.3 Customer-spec. information Customer : NAVISTAR 100 s: (11.9...12.5) Engine : DTA-466C Spread cm3 : 0.31st version kW : 172.0 100 s: (0.6) : 2400 Rated speed rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.5...6.6 Del.quantity cm3/: 1.8...2.2 Test oil 100 s: (1.5...2.4) inlet temp. OC : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 assembly : 1 688 901 016 travel mm : 8.80...9.20 2nd speed rpm : 1250 Opening. travel mm : 7.90...8.10 pressure, bar : 207...210 3rd speed rpm : 500 travel mm : 2.60...3.20 Orifice plate 4th speed rpm : 350 diameter mm : 0.5 travel mm : 1.30...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1380 Rack travel in mm : 6.70...9.30 x Wall thickness x Length mm : 6,00x2,00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 800 Speed per values ____ Aneroid pressure h: 800 Del.quantity : 121.5...123.5 1000 : (119.5...125.5) cm3 : 3.50 1000 : (6.00) BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread

1st version

Control lever

position degrees: 45...50

Testing:

1st rack travel in: 11.80

Speed rpm : 1250...1260

2nd rack travel in: 4.00

Speed rpm : 1395...1405

4th rack travel in: 1460

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 9.00

Speed rpm : 350

Rack travel in mm : 6.50...6.60

CONSTANT REGULATION

Speed rpm : 370...500

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed Pressure hPa : 240

Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...9.90

2nd pressure hPa : 520 Rack travel in m: 11.90...12.20

3rd pressure hPa : 800

Rack travel in m: 12.80...12.90

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

B28

Speed rpm : 1200

Del.quantity cm3/: 124.5...128.5

1000 s: (122.5...130.5)

cm3 : 6.50 Spread

1900 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 65.5...67.5

1000 s: (63.5...69.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1250...1205

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.50...6.60

Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

Spread

cm3 : 3.501000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff. CO1

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 : (2.95...3.15) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : IHC 7,6 R 6 Test sheet Edition : 06.04.88 Replaces : 11.85 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 162 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1134 EP type number : 0 413 406 125 1st speed rpm : 800 Governor Governor design. : RQV350...1200MW46-2 Rack travel in mm : 12.20...12.30 : 0 420 083 092 Governer no. Del.quantity cm3/: 10.6...10.8 Customer-spec. information Customer : NAVISTAR 100 s: (10.4...11.0) Engine : DTA-466C Spread cm3 : 0.31st version kW : 156.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.4...6.5 Del.quantity cm3/: 1.8...2.2 Test oil 100 s: (1.5...2.4) inlet temp. OC : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1350 1st speed : 1 688 901 016 assembly : 8.80...9.20 travel mm rpm : 1250 2nd speed Opening : 7.90...8.10 travel mm pressure, bar : 207...210 3rd speed rpm : 500 : 2.60...3.20 travel mm Orifice plate 4th speed rpm : 350 diameter mm : 1.30...1.70 : 0.5 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1355 x Wall thickness Rack travel in mm : 6.70...9.30 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Speed rpm : 800 Set equal delivery quant. per values Aneroid pressure h: 800 Del.quantity : 106.0...108.0 1000 : (104.0...110.0) BEGINNING OF DELIVERY Test pressure, bar: 30...32 cm3 : 3.50 Spread 1000 : (6.00)

1st version

Control lever

position degrees: 46...51

Testing:

1st rack travel in: 11.20

rpm : 1270...1290 Speed

2nd rack travel in: 4.00

Speed rpm : 1390...1400 4th rack travel in: 1460

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 13...21

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.4

Testing:

rpm : 100 Speed Minimum rack trave: 9.00

Speed rpm : 350

Rack travel in mm: 6.40...6.50

CONSTANT REGULATION

Speed rpm : 370...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 240 Pressure

Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 800

Rack travel in m: 12.20...12.30

2nd pressure hPa : -

Rack travel in m: 10.00...10.10

3rd pressure hPa : 450

Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min : 220 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

C03

rpm : 1200 Speed

Del.quantity cm3/: 110.5...114.5 1000 s: (108.5...116.5)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 67.5...69.5 1000 s: (65.5...71.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.40...6.50 Del.quantity cm3/: 18.0...22.0

1000 s: (15.5...24.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose

with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff. C04

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Test sheet : IHC 7,6 R : 06.04.88 Edition Replaces : 11.85 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 163 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm : 800 Governor Governor design. : RQV350...1200MW46-3 Rack travel in mm : 12.40...12.50 : 0 420 083 093 Governer no. Del.quantity cm3/: 11.9...12.1 Customer-spec. information Customer : NAVISTAR 100 s: (11.6...12.3) Engine : DTA-466C Spread cm3 : 0.31st version kW : 179.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm : 6.2...6.3 Del.quantity cm3/: 1.8...2.2 Test oil 100 s: (1.5...2.4) inlet temp. OC : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 1350 assembly : 1 688 901 016 travel mm : 8.80...9.20 2nd speed rpm : 1250 Opening. travel mm : 7.90...8.10 pressure, bar : 207...210 3rd speed rpm : 500 : 2.60...3.20 travel mm Orifice plate 4th speed rpm : 350 diameter mm : 0.5 travel mm : 1.30...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Speed rpm: 1355 Rack travel in mm: 6.70...9.30 Outside diameter x Wall thickness x Length mm : 6,00x2,00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 800 per values Aneroid pressure h: 900 Del.quantity : 119.0...121.0 BEGINNING OF DELIVERY 1000 : (116.5...123.5) Test pressure, bar: 30...32 cm3 : 3.50 Spread

1000 : (6.00)

1st version

Control lever

position degrees: 47...52

Testing:

1st rack travel in: 11.40

rpm : 1250...1270 Speed

2nd rack travel in: 4.00

Speed rpm : 1375...1385

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 350° Speed

Rack travel in mm: 6.2

Testing:

Speed rpm : 100 Minimum rack trave: 9.00

Speed rpm : 350

Rack travel in mm : 6.20...6.30

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 220

Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80 2nd pressure hPa : 440

Rack travel in m: 11.90...12.20

3rd pressure hPa : 900

Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

C06

Speed rpm : 1200 Del.quantity cm3/ : 121.5...125.5

1000 s: (119.5...127.5)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 booa2

Del.quantity cm3/: 86.5...88.5 1000 s: (84.5...90.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1250...1270 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 350 Rack travel in mm: 6.20...6.30 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose

with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff. C07

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : RVI 8,8 K 5 Phasing : 0-60-120-180-240-300 Edition : 13.06.88 Replaces : 25.03.88 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 165 1st speed rpm : 1300 Injection pump Pump designation : PES6MW100/320RS1016 Rack travel in mm : 11.10...11.20 EP type number : 0 413 406 010 Governor Del.quantity cm3/: 8.9...9.1 Governor design: : RQV300...1300MW25-5 Governer no: : 0 420 083 095 100 s: (8.7...9.3) Customer-spec. information Spread cm3 : 0.3Customer : RVI 100 s: (0.6) Engine : MIDRO6.02-12 F rpm : 300.0 2nd speed Rack travel in mm : 5.70...5.80 Del.quantity cm3/: 0.9...1.3 1st version kW : 125.0 Rated speed : 2600 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL 1st speed rpm : 1475 inlet press., bar: 1.50 : 8.50...8.90 travel mm rpm : 1350 2nd speed Test nozzle holder : 7.60...7.80 travel mm assembly : 0 681 343 009 rpm : 500 3rd speed : 3.00...3.40 travel mm Opening rpm : 300 4th speed pressure, bar : 173...176 : 1.10...1.70 travei mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 rpm : 1300 Outside diameter x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 per values Aneroid pressure h: 665 : 89.5...91.5 1000 : (87.5...93.5) cm3 : 3.50 Del.quantity BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread 1000 : (6.00) Prestroke mm : 3.00...3.10

RATED SPEED

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

C08

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.10

Speed rpm : 1370...1380

2nd rack travel in: 4.00

Speed rpm : 1495...1525 4th rack travel in: 1650

Speed rpm : 0.00...0.10

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm : 300
Rack travel in mm : 5.80
Speed rpm : 300
Rack travel in mm : 5.80...5.90

Speed rpm : 200 Maximum rack trave: 3.60

CONSTANT REGULATION

rpm : 340...600 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed Pressure hPa : 665

Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...9.90

2nd pressure hPa : 200

Rack travel in m: 10.20...10.30

3rd pressure hPa : 230

Rack travel in m: 10.80...10.90

START CUT-OUT

1/min : 230 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 665 rpm : 900 Speed

Del.quantity cm3/: 86.5...90.5

1000 s: (84.5...92.5) Spread

cm3 : 5.00 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 56.0...58.0

1000 s: (54.0,..60.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 95.0...105.0

1000 s: (92.0...108.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.70...5.80
Del.quantity cm3/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Start-of-delivery mark is at 80 after

start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : KHD 6.1 N 8 : 12.08.88 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces : 02.11.87 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 166 1st speed rpm : 1325 Injection pump Pump designation : PES6MW1CO/72ORS1133 Rack travel in mm : 11.10...11.20 EP type number : 0 413 406 126 Governor Del.quantity cm3/: 10.2...10.4 Governor design. : RQ325...1325MW65 Governer no. : 0 420 082 018 100 s: (10.0...10.6) Customer-spec. information Spread cm3 : 0.3Customer : KHD 100 s: (0.6) Engine : BF 6L 913 BW rpm : 300.0 2nd speed 1st version kW : 124.0 Rack travel in mm : 7.0...7.1 Rated speed : 2700 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.7) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL 1st speed rpm : 1460 Inlet press., bar: 1.50 travel mm : 8.60...9.20 rpm : 1380 2nd speed Test nozzle holder travel mm : 6.50...6.70 : 0 681 343 009 assembly 3rd speed rpm : 425 : 4.00...4.40 travel mm Opening rpm : 300 4th speed pressure, bar : 172...175 travel mm : 2.00...2.40 GUIDE SLEEVE POSITION Test lines : 1 680 750 014 Control-lever position Degree: -2 Outside diameter rpm : 700 Speed x Wall thickness Rack travel in mm : 19.20...20.80 : 6.00X2.00X600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1325 Aneroid pressure h: 700 per values Delouantity -: 102.0...104.0 BEGINNING OF DELIVERY 1000 : (100.0...106.0) Test pressure, bar: 30...32 cm3 : 3.50Spread 1000 : (6.00) : 3.50...3.60 Prestroke mm : (3.45...3.65) RATED SPEED

C10

Rack travel in mm : 9.00...12.00

1st version Control lever

position degrees: 26...34

Setting point:

rpm : 700 Speed J Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.10

Speed rpm : 1370...1380

2nd rack travel in: 4.00

Speed rpm : 1440...1470

4th rack travel in: 1550

Speed rpm : 0.10...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.0

Testing:

Speed rpm : 100 Minimum rack trave: 8.60 Speed rpm : 300

Rack travel in mm : 7.00...7.10

CONSTANT REGULATION

Speed rpm : 340...450

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 450

Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : 700

Rack travel in m: 11.10...11.20

2nd pressure hPa : -

Rack travel in m: 9.40...9.50

3nd pressure hPa : 350

Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 850 Speed

Del.quantity cm3/: 94.0...98.0 1000 s: (92.0...100.0)

Spread

cm3 : 3.501000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 56.0...58.0 1000 s: (54.0...60.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1370...1380 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...140.0

1000 s: (117.0...143.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.00...7.10 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) 結告 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 R 8 Edition : 06.04.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 171

Injection pump

Pump designation : PES6MW100/320RS1112

EP type number : 0 413 406 108

Governor

Governor design. : RQV350...1300\\\46-4

Governer no. : 0 420 083 104

Customer-spec. information Customer : NAVISTAR

Engine : DT-466 C

: 145.5 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 016 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant,

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.0 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3 Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

: 8.30...8.50 travel mm

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70 4th speed rpm : 350

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1355 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

1st version

Control lever

position degrees: 46...51

Testing:

1st rack travel in: 10.00

Speed rpm : 1345...1365

2nd rack travel in: 4.90

Speed rpm : 1460...1470

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

rpm : 350

Rack travel in mm: 5.9

Testing:

Speed rpm : 100

Minimum rack trave: 9.00

Speed rpm : 350

Rack travel in mm : 5.90...6.00

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 Speed

Pressure hPa : 200

Rack travel mm : 9.90...10.00

Measurement

Speed 1/min: 500

1st pressure hPa : 700

Rack travel in m: 11.00...11.10

2nd pressure hPa : -

Rack travel in m: 9.60...9.70

3rd pressure hPa : 370

Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 220 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

C13

rpm : 1300 Speed

Del.quantity cm3/: 99.0...103.0

1000 s: (97.0...105.0)

cm3 : 6.50 Spread 1000 s: (7.0)

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 66.0...68.0

1900 s: (64.0...70.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1345...1365

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.00
Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose

with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff. C14

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: IHC 7,6 R 9 : 06.04.88 Test sheet Edition : 12.09.87 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 172

Injection pump

Pump designation : PES6MW100/320RS1134

EP type number : 0 413 406 125

Governor

Governor design. : RQV350...1300MW46-5

Governer no. : 0 420 083 105

Customer-spec. information Customer : NAVISTAR

Engine : DTI-466C

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder

assembly : 1 688 901 016

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 6.6...6.7 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.10...8.50 2nd speed rpm : 1470

: 8.90...9.90 travel mm

3rd speed rpm: 800

travel mm : 4.50...5.30

4th speed rpm : 350

travel mm : 1.60...2.40

GUIDE SLEEVE POSITION Control-lever position

Decree: -1

rpm : 1510

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 900

Del.quantity : 108.5...110.5

1000 : (106.5...112.5)

cm3 : 3.50Spread

1000 : (6.00)

1st version Control lever

position degrees: 46...51

Testing:

1st rack travel in: 11.20

rpm : 1345...1365 Speed

2nd rack travel in: 4.00

rpm : 1495...1505 Speed

4th rack travel in: 1575

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

rpm : 350° Rack travel in mm: 6.6

Testing:

Speed rpm : 100

Minimum rack trave: 9.10 rpm : 350 Speed

Rack travel in mm : 6.60...6.70

CONSTANT REGULATION

Speed rpm : 360...540

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 280

Rack travel mm : 10.10...10.20

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.50

2nd pressure hPa : 620

Rack travel in m: 11.50...11.80

3rd pressure hPa : 900

Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min : 220 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

C16

cm3 : 6.50 Spread

1000 s: (7.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 55.0...57.0 1000 s: (53.0...59.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1345...1365

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.90...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.60...6.70 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust låtching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.15 : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R10 Edition : 06.04.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 173 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1134 EP type number : 0 413 406 125 1st speed rpm: 900 Governor Governor design: : RQV350...1300MW46-6 Governer no: : 0 420 083 106 Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 9.4...9.6 Customer-spec. information Customer : NAVISTAR 100 s: (9.2...9.8) Engine : DTI-466 C Spread cm3 : 0.3: 145.0 1st version kW 100 s: (0.6) Rated speed : 2600 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.6...6.7 Del.quantity cm3/: 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. OC : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1350 1st speed assembly : 1 688 901 016 : 8.30...8.50 travel mm 2nd speed rpm : 1470 Opening travel mm : 9.10...9.50 pressure, bar : 207...210 3rd speed rpm : 550 travel mm : 3.10...3.70 Orifice plate rpm : 350 4th speed diameter mm : 0.5 travel mm : 1.30...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1355 Rack travel in mm : 6.70...9.30 x Wall thickness x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 900 Speed per values ____ Aneroid pressure h: 800 : 94.5...96.5 Del.quantity 1000 : (92.5...98.5) cm3 : 3.50 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread

1000 : (6.00)

Speed rpm : 1300 Del.quantity cm3/ : 100.0...104.0 1000 s: (98.0...106.0) RATED SPEED 1st version Spread cm3 : 6.50Control lever 1000 s: (7.0) position degrees: 56...60 Aneroid pressure h: -Speed rpm : 500 Testing: Del.quantity cm3/ : 52.5...54.5 1st rack travel in: 10.60 1000 s: (50.5...56.5) rpm : 1360...1380 Speed 2nd rack travel in: 4.00 rpm : 1485...1495 BREAKAWAY 4th rack travel in: 1550 Speed rpm : 0.00...1.00 1st version 1mm rack travel less than LOW IDLE 1 Control lever full load rack tr: 10.60 position degrees: 10...18 Speed rpm : 1360...1380 Setting point w/out bumper spring : 350 Lbw STARTING FUEL DELIVERY Rack travel in mm: 6.6 Testing: Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 Speed rpm : 100 Minimum rack trave: 9.00 1000 s: (137.0...183.0) Speed rpm : 350 Rack travel in mm : 19.00...21.00 Rack travel in mm : 6.60...6.70 LOW IDLE CONSTANT REGULATION Speed rpm : 360...540 Speed rpm : 350 Rack travel in mm : 6.60...6.70 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 Aneroid/Altitude Compensator Test 1000 s: (5.50) 1st version Setting Remarks: Speed : 500 rpm Pressure hPa : 250 Rack travel mm : 9,90...10.00 Perform pump setting only with IH hose with restriction of 1.2 mm diameter. Measurement Speed 1/min : 500 1st pressure hPa : 800 Rack travel in m: 11.60...11.70 2nd pressure hPa : -Before checking sleeve position, Rack travel in m: 9.40...9.50 first adjust latching. 3rd pressure hPa : 540 Rack travel in m: 11.00...11.30 START CUT-OUT In unlatched condition, do not Speed 1/min : 220 (210) operate greater than n = 500 1/min

Set low idle at stop screw.

1st version

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 800

Set shutoff stop 1.5...2.0 mm before shutoff. C20

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Note remarks Rack travel in mm : 9.00...12.00 firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R 8 Edition : 06.04.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 175 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1134 EP type number : 0 413 406 125 1st speed rpm : 850 Governor Governor design. : RQV350...1200MW46-8 Rack travel in mm : 11.40...11.50 Governer no. : 0 420 083 108 Del.quantity cm3/: 9.1...9.3 Customer-spec. information Customer : NAVISTAR 100 s: (8.9...9.5) Engine : DT-466 C Spread cm3 : 0.31st version kW : 134.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed Rack travel in mm: 6.4...6.5 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. OC : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL 1st speed rpm : 1250 travel mm : 7.80...8.00 2nd speed rpm : 1340 Test nozzle holder assembly : 1 688 901 016 Opening travel mm : 8.80...9.20 pressure, bar : 207...210 3rd speed rpm : 500 travel mm : 2.60...3.20 Orifice plate rpm : 350 4th speed diameter mm : 0.5 travel mm : 1.30...1.80 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1380
Rack travel in mm : 6.70...9.30
FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 800
Del.quantity : 91.0...93.0
1000 : (89.0...95.0)
Spread cm3 : 3.50

Outside diameter x Wall thickness x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

1st version Control lever

position degrees: 41...46

Testing:

1st rack travel in: 10.40

Speed rpm : 1230...1250

2nd rack travel in: 4.00

Speed rpm : 1350...1360 4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 6.4

Testing:

Speed rpm : 100 Minimum rack trave: 9.00 Speed rom : 350

Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

Speed rpm : 360...500

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed Pressure hPa : 240

Rack travel mm : 10.40...10.50

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 470

Rack travel in m: 11.10...11.40 3rd pressure hPa : 800

Rack travel in m: 11.40...11.50

START CUT-OUT

1/min : 220 (210) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 1200

Del.quantity cm3/: 96.0...100.0

1000 s: (94.0...102.0)

Spread cm3 : 6.501000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 61.5...63.5

1000 s: (59.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1230...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.40...6.50 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R12 : 06.04.88 Edition Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 176 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1140 EP type number : 0 413 406 135 rpm : 800 1st speed Governor Governor design. : RQV350...1200MW72 Rack travel in mm : 11.00...11.10 Governer no. : 0 420 083 109 Del.quantity cm3/: 8.6...8.8 Customer-spec. information Customer : NAVISTAR 100 s: (8.4...9.0) Engine : DT-466 C Spread cm3 : 0.31st version kW : 123.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.4...6.5 Del.quantity cm3/: 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. °C : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL rpm : 1250 : 7.80...8.00 Test nozzle holder 1st speed assembly : 1 688 901 016 travel mm rpm : 1340 2nd speed Opening. travel mm : 8.80...9.20 pressure, bar : 207...210 3rd speed rpm : 500 travel mm : 2.60...3.20 Orifice plate rpm : 350 4th speed diameter mm : 0.5 travel mm : 1.30...1.80 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 rpm : 1380 Outside diameter Speed x Wall thickness Rack travel in mm : 6.60...9.40 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values 1st version

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Speed

Del.quantity

rpm : 800

: 86.0...88.0

1st version Control lever

position degrees: 46...51

Testing:

1st rack travel in: 10.00

rpm : 1240...1260 Speed

2nd rack travel in: 4.00

Speed rpm: 1350...1360
4th rack travel in: 1450
Speed

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.4

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

Speed rpm : 370...450

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

: 1200 Speed Lbw

Del.quantity cm3/: 89.0...93.0

1000 s: (87.0...95.0)

Spread cm3 : 6.50

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rom : 1240...1260

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

C25

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.40...6.50 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : IHC 7,6 R13 : 06.04.88 Test sheet Edition Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 181 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1134 EP type number : 0 413 406 125 1st speed rpm: 850 Governor Governor design. : RQV350...1200MW46-9 Rack travel in mm : 11.00...11.10 Governer no. T : 0 420 083 116 Del.quantity cm3/: 8.2...8.4 Customer-spec. information Customer : NAVISTAR 100 s: (8.0...8.6) : DT-466 C Engine Spread cm3 : 0.31st version kW : 122.0 100 s: (0.6) Rated speed : 2400 2nd speed rpm : 350.0 TEST BENCH REQUIREMENTS Rack travel in mm: 6.6...6.7 Del.quantity cm3/ : 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. OC : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1250 1st speed assembly : 1 688 901 016 : 7.80...8.00 travel mm rpm : 1340 2nd speed Opening travel mm : 8.80...9.20 pressure, bar : 207...210 rpm : 700 3rd speed travel mm : 4.20...4.80 Orifice plate rpm : 350 4th speed diameter mm : 0.5 : 1.30...1.79 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1355 x Wall thickness Rack travel in mm : 6.70...9.30 : 6.00x2.00x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1 : version Set equal delivery quant. rpm : 850 Speed per values ____ Aneroid pressure h: 700 Del.quantity : 82.0...84.0 1000 : (80.0...86.0) Spread cm3 : 3.50 BEGINNING OF DELIVERY Test pressure, bar: 30...32 1000 : (6.00)

1st version Control lever

position degrees: 46...51

Testing:

1st rack travel in: 10.00

Speed rpm : 1265...1285

2nd rack travel in: 4.00

Speed rpm : 1365...1375

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 350

Rack travel in mm: 6.6

Testing:

Speed rpm : 100

Minimum rack trave: 9.00 Speed rpm : 350

Rack travel in mm : 6.60...6.70

CONSTANT REGULATION

Speed rpm : 360...540

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 210

Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.00...10.10

2nd pressure hPa : 300
Rack travel in m: 10.60...10.90
3rd pressure hPa : 700

Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 220 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

C27

Speed rpm : 1200

Del.quantity cm3/: 86.0...90.0

1000 s: (84.0...92.1)

cm3 : 6.50Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 58.5...60.5

1000 s: (56.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1265...1285

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.60...6.70 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose

With restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

In unlatched condition, do not

operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB 6.0 D 34 Phasing : 0-60-120-180-240-300 Edition : 05.08.88 Replaces : 29.04.88 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 184 1st speed rpm: 1300 Injection pump Pump designation : PES6MW100/720RS1144 Rack travel in mm : 10.90...11.00 EP type number : 0 413 406 138 Governor Del.quantity cm3/ : 7.2...7.4 Governor design.: RQV300...1300MW48-3 Governer no. : 0 420 083 121 100 s: (7.0...7.6) Customer-spec. information Spread cm3 : 0.3Customer : DB 100 s: (0.6) Engine : 0M366A rpm : 300.0 2nd speed 1st version kW Rack travel in mm: 7.8...7.9 : 125.0 Rated speed : 2600 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1340 Inlet press., bar : 1.50 : 8.50...8.70 travel mm 2nd speed rpm : 1450 : 9.30...9.70 Test nozzle holder travel mm assembly : 0 681 343 009 3rd speed rpm : 500 : 2.70...3.30 travel mm Openina 4th speed rpm : 300 pressure, bar *;* 172...175 travel mm : 1.20...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter Speed rpm : 1350 x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00x1.50x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1300 Speed per values ____ Del.quantity : 72.0...74.0 1000 : (70.0...76.0) cm3 : 3.50 1000 : (6.00) BEGINNING OF DELIVERY Spread Test pressure, bar: 30...32 Prestroke mm : 3.70...3.80 RATED SPEED : (3.65...3.85)

1st version

Rack travel in mm : 19.00...21.00

001

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.90

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1425...1455 4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 300° Rack travel in mm: 7.8

Testing:

rpm : 100 Speed Minimum rack trave: 9.30 Speed rpm : 300

Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.90...11.00

2nd speed rpm : 800 Rack travel in m: 11.60...11.80

3rd speed rpm : 585

Rack travel in m: 11.80...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/ : 71.0...73.0

1000 s: (69.0...75.0)

Spread cm3 : 5.00 1000 s: (7.0) Speed rpm : 585 Del.quantity cm3/ : 65.0...68.0

1000 s: (62.5...70.5) cm3 ; 5.00

Spread

1000 s: (7.00)

BREAKAWAY

1st version

002

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 7.80...7.90 Del.quantity cm3/: 9.0...13.0

1000 s: (6.5...15.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6.0 D 21 : 16.05.88 Test sheet Edition Replaces : 19.02.88 Test oil : ISO-4113 Combination no. : 0 403 446 187 Injection pump Pump designation : PES6MW100/720RS1129 EP type number : 0 413 406 121 Governor Governor design. : RQV300...1300MW50-2 Governer no. : 0 420 083 124 Customer-spec. information Customer : DB : OM 366 LA Engine 1st version kW : 150.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar : 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00

D03

Test pressure, bar: 30...32 Prestroke mm : 3.70...3.80 : (3.65...3.85)

Firing order Phasing 1st speed Spread 2nd speed Spread Speed Speed Spread

: 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING rpm: 1300 Rack travel in mm : 11.20...11.30 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) cm3 : 0.3100 s: (0.6) rpm : 300.0 Rack travel in mm: 5.5...5.6 Del.quantity cm3/: 0.9...1.1 100 s: (0.6...1.4) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1340 : 8.60...8.80 travel mm rpm : 1430 2nd speed travel mm : 9.30...9.70 rpm : 300 3rd speed travel mm : 1.20...1.60 rpm : 700 4th speed : 3.80...4.40 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1340 Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Aneroid pressure h: 700 : 98.0...100.0 Del.quantity 1000 : (96.0...102.0) cm3 : 3.50 1000 : (6.00) RATED SPEED

1st version Control lever position degrees: 51...59 Testing: 1st rack travel in: 10.20 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1430...1460 Speed 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm: 5.50...5.60 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 CONSTANT REGULATION Speed rpm : 320...530 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 400 Speed rpm Pressure Rack travel mm : 9.90...10.00 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 9.50...9.60 2nd pressure hPa : 500 Rack travel in m: 10.80...11.10 3rd pressure hPa : 700 Rack travel in m: 11.20...11.30 START CUT-OUT

Speed rpm : 600 Del.quantity cm3/: 83.5...86.5 1000 s: (81.0...89.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 49.0...51.0 1000 s: (47.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1340...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 88.0...98.0 1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.50...5.60 Del.quantity cm3/ : 9.0...11.0 1000 s: (6.0..14.0) cm3 : 3.50 1000 s: (5.00) Spread

Remarks:

Speed 1/min : 220 (230)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700

D04

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB 6,0 D 28 Phasing : 0-60-120-180-240-300 Edition : 19.08.88 Replaces : 01.07.88 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 188 1st speed rpm: 1300 Injection pump Pump designation : PES6MW100/720RS1144 Rack travel in mm : 10.10...10.20 EP type number : 0 413 406 138 Governor Dei.quantity cm3/: 6.4...6.6 Governor design. : RQV300...1300MW48-4 Governor no. : 0 420 083 126 100 s: (6.2...6.8) Customer-spec. information Spread cm3 : 0.3Customer : DB 100 s: (0.6) : 0M366A Engine rpm : 300.0 2nd speed 1st version kW : 100.0 Rack travel in mm: 7.3...7.4 Rated speed : 2600 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1340 Inlet press., bar : 1.50 travel mm : 8.50...8.70 2nd speed rpm : 1450 Test nozzle holder travel mm : 9.30...9.70 assembly : 0 681 343 009 3rd speed rpm : 500 : 2.70...3.30 travel mm Opening 4th speed rpm : 300 pressure, bar : 172...175 travel mm : 1.20...1.70 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter Speed rpm : 1350 x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1300 Speed per values : 64.0...66.0 Del.quantity 1000 : (62.0...68.0) cm3 : 3.50 1000 : (6.00)

Spread

RATED SPEED

1st version

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 19.00...21.00

005

Control lever position degrees: 50...58 Testing: 1st rack travel in: 9.10 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1415...1445 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 7.3 Testing: Speed rpm : 100 Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.30...7.40 CONSTANT REGULATION Speed rpm : 330...500 TORQUE CONTROL

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.10...10.20
2nd speed rpm : 750
Rack travel in m: 11.10...11.20
3rd speed rpm : 600
Rack travel in m: 11.10...11.20

4th speed rpm : 1000
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min: 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/ : 61.5...64.5 1000 s: (59.0...67.0) Spread cm3 : 5.00 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.10 Speed rpm : 1340...1350

006

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.40
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : RVI 8,8 Q Phasing : 0-60-120-180-240-300 Edition : 16.06.88 Replaces Tolerance + - D : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 190 1st speed rpm : 1250 Injection pump Pump designation : PES6MW100/320RS1154 Rack travel in mm : 12.90...13.00 EP type number : 0 413 406 144 Governor Del.quantity cm3/: 9.9...10.1 Governor design. : RQV275...1250MW80 Governer no. : 0 420 083 128 100 s: (9.7...10.3) Customer-spec. information Spread cm3 : 0.3Customer : RVI 100 s: (0.6) Engine : MIDR 060226 rpm : 275.0 2nd speed 1st version kW : 128.7 Rack travel in mm : 6.10...5.90 : 2500 Rated speed Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.2) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL 1st speed rpm : 1475 Inlet press., bar : 1.50 travel mm : 9.20...9.60 rpm : 1300 2nd speed Test nozzle holder travel mm : 7.80...8.00 : 0 681 343 009 assembly rpm : 500 3rd speed : 3.00...3.60 travel mm Opening 4th speed rpm : 275 pressure, bar : 172...175 travel mm : 1.00...1.40 GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1300 x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1250 per values Aneroid pressure h: 800 Del.quantity : 99.5...101.5 1000 : (97.5...103.5) cm3 : 3.50 1000 : (6.00) BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread : 3.50...3.60 Prestroke mm

RATED SPEED

007

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

1st version Control lever position degrees: 48...56 Testing: 1st rack travel in: 12.00 rpm : 1330...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1490...1530 4th rack travel in: 1600 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm : 7.0 Testing: : 200 Speed CDM Minimum rack trave: 8.50 Speed : 275 rpm Rack travel in mm : 6.10...5.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -Rack travel mm : 11.00...10.90 Measurement 1/min : 500 Speed 1st pressure hPa : 170 Rack travel in m: 11.60...11.50 2nd pressure hPa : 360 Rack travel in m: 12.50...12.40 3rd pressure hPa : 800 Rack travel in m: 12.90...13.00 START CUT-OUT Speed 1/min : 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 500 Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 1330...1350 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm -Del.quantity cm3/: 83.0...97.0 1000 s: (80.0...100.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 6.10...5.90 Del.quantity cm3/: 18.0...22.0 1000 s: (15.0...22.0) cm3 : 3.50 Spread

1000 s: (5.00)

Remarks: :

800

Specá

Spread

Aneroid pressure h: 800

Aneroid pressure h: -

rpm_ : 700 Del.quantity cm3/: 90.0...94.0

> cm3 : 5.001000 s: (7.0)

1000 s: (88.0...96.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R22 Edition : 19.08.88 Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 192 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm: 900 Governor Governor design. : RQV350...1300MW72-2 Rack travel in mm : 10.00...10.10 : 0 420 083 141 Governer no. Del.quantity cm3/: 8.6...8.8 Customer-spec. information Customer : NAVISTAR 100 s: (8.4...9.0) Engine : DT-466 Spread cm3 : 0.31st version kW : 136.0 100 s: (0.6) Rated speed : 2600 2nd speed rpm : 350.0 TEST BENCH REQUIREMENTS Rack travel in mm: 6.4...6.5 Del.quantity cm3/ : 1.9...2.3 Test oil 100 s: (1.6...2.5) inlet temp. OC : 38...42 Spread cm3 : 0.3100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1350 1st speed : 1 688 901 016 assembly : 8.30...8.50 travel mm 2nd speed rpm : 1460 Opening travel mm : 9.10...9.50 : 207...210 pressure, bar 3rd speed rpm : 550 travel mm : 3.10...3.70
4th speed rpm : 350 Orifice plate diameter mm : 0.5 : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1510 x Wall thickness Rack travel in mm : 6.60...9.40 : 6.00x2.00x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 900 Speed Del.quantity : 80.0...90.0)

Spread

: 3.50

1000 : (6.00)

cm3

per values ____

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

1st version Control lever

position degrees: 45...50

Testing:

1st rack travel in: 9.00

Speed rpm : 1360...1380

2nd rack travel in: 4.00

Speed rpm : 1460...1470

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Setting point w/out bumper spring

Speed rpm : 350' Rack travel in mm: 6.4

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00 rpm : 350 Speed

Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

rpm : 300...450 Speed

START CUT-OUT

Speed 1/min : 220 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1300

Del.quantity cm3/: 88.0...92.0

1000 s: (86.0...94.0)

cm3 : 5.00 Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1360...1380

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00

D10

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.40...6.50 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R20 Edition : 05.08.88 Replaces : 16.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 446 194 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1112 EP type number : 0 413 406 108 1st speed rpm: 900 Governor Governor design. : RQV350...1300MW46-12 Rack travel in mm : 10.80...10.90 Governer no. : 0 420 083 143 Del.quantity cm3/: 10.3...10.5 Customer-spec. information Customer : NAVISTAR 100 s: (10.1...10.7) Engine : DT-466 Spread cm3 : 0.31st version kW : 154.5 100 s: (0.6) Rated speed : 2600 2nd speed rpm : 350.0 Rack travel in mm : 5.5...5.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.6...2.0 Test oil 100 s: (1.3...2.2) inlet temp. OC : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 (B) Setting of injection pump with governor Inlet press., bar : 2.80 GUIDE SLEEVE TRAVEL Test nozzle holder rpm : 1350 1st speed assembly : 1 688 901 016 : 8.30...8.50 travel mm 2nd speed rpm : 1460 Opening : 9.10...9.50 travel mm : 207...210 rpm : 550 pressure, bar 3rd speed : 3.10...3.70 travel mm Orifice plate rpm : 350 4th speed diameter mm : 0.5 : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 008 Control-lever position Degree: -1 Outside diameter Speed rpm : 1510 Rack travel in mm : 6.60...9.20 x Wall thickness x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version

Speed

Spread

Del.quantity

rpm : 900

cm3 : 3.50

1000 : (6.00)

: 103.0...105.0

1000 : (101.0...107.0)

Aneroid pressure h: 800

Set equal delivery quant.

per values ____

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

1st version Control lever

position degrees: 44...49

Testing:

1st rack travel in: 9.80

Speed rpm : 1365...1385

2nd rack travel in: 4.00

Speed rpm : 1470...1480

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

rpm : 350° Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 7.30 Speed rpm : 350

Rack travel in mm : 5.50...5.60

CONSTANT REGULATION

rpm : 360...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 170 Pressure

Rack travel mm : 10.40...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 230

Rack travel in m: 10.60...10.90

3rd pressure hPa : 800

Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

D12

Speed rpm : 1300

Del.quantity cm3/: 105.0...109.0

1000 s: (103.0...111.0)

cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 87.0...89.0 1000 s: (85.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1365...1385

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0

1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.50...5.60 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

:

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 0MB 8,1 E Edition : 05.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 203 Injection pump Pump designation : PES6MW100/720RS1163 EP type number : 0 413 406 152 Governor Governor design. : RQV300...1100MW19 : 0 420 083 014 Governer no. Cust. part no. : 4843739 Customer-spec. information Customer : IVECO-OM Engine : 8365.25.500 1st version kW : 132.4 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values

per values ____

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

: (2.85...3.05) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 9.6...9.8 100 s: (9.4...10.0) Spread cm3 : 0.3100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm: 8.0...8.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.9...1.8) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1220 travel mm : 9.60...10.00 2nd speed rpm : 1140 travel mm : 8.70...8.90 rpm : 500 3rd speed travel mm : 2.70...3.30 rpm : 300 4th speed travel mm : 1.00...1.40 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1100 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 500 Del.quantity : 96.0...98.0 1000 : (94.0...100.0) cm3 : 3.50 Spread 1000 : (6.00)

: 2.90...3.00

Prestroke mm

1st version Control lever

position degrees: 45...53

Testing:

1st rack travel in: 12.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Setting point w/out bumper spring

rpm : 300

Rack travel in mm : 8.0

Testing:

Speed rpm : 100

Minimum rack trave: 9.50

Speed rpm: 300 Rack travel in mm: 8.00...8.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.70...13.80

2nd speed rpm : 700

Rack travel in m: 14.60...14.70

3rd speed rpm : 850

Rack travel in m: 14.30...14.50

4th speed rpm : 1000

Rack travel in m: 13.70...13.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 270

Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 13.30...13.40

2nd pressure hPa : 200

Rack travel in m: 13.50...13.80

3rd pressure hPa : 500

Rack travel in m: 14,60...14.70

FUEL DELIVERY CHARACTERISTICS

015

1st version

Aneroid pressure h: 500

rpm : 700 Speed

Del.quantity cm3/: 101.0...105.0 1000 s: (99.0...107.0)

cm3 : 5.00 1000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 75.0...77.0 1000 s: (73.0...79.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed com : 100

Del.quantity cm3/ : 160.0...170.0

1000 s: (157.0...173.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 8.00...8.10

Del.quantity cm3/ : 11.5...15.5

1000 s: (9.0...18.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks Test sheet : MB 6,0 D 40 Phasing : 0-60-120-180-240-300 Edition : 12.08.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 207 1st speed rpm : 1300 Injection pump Pump designation : PES6MW100/720RS1144 Rack travel in mm : 11.20...11.30 EP type number : 0 413 406 138 Governor Del.quantity cm3/: 7.9...8.1 Governor design. : RQ300/1300MW96 Governer no. : 0 420 082 032 100 s: (7.7...8.3) Customer-spec. information Spread cm3 : 0.3Customer 100 s: (0.6) Engine : 0M366A rpm : 300.0 2nd speed 1st version kW : 125.0 Rack travel in mm: 7.4...7.6 Rated speed Del.quantity cm3/: 1.0...1.4 : 2600 100 s: (0.7...1.6) cm3 : 0.3 TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1425 Inlet press., bar : 1.50 travel mm : 9.50...9.90 rom : 1350 2nd speed Test nozzle holder : 7.80...8.00 travel mm assembly : 0 681 343 009 3rd speed rpm : 525 : 4.90...5.50 travel mm Opening 4th speed rpm : 300 pressure, bar : 172...175 : 2.10...2.50 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -2 Outside diameter rpm : 1200 Speed x Wall thickness Rack travel in mm : 12.70...14.30 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 per values ____ 79.0...81.0 1000 : (77.0...83.0) Del.quantity BEGINNING OF DELIVERY cm3 : 3.50Spread Test pressure, bar: 30...32 RATED SPEED

1st version

Prestroke mm

: 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Control lever position degrees: 34...42 Setting point: Speed rpm : 1200 Rack travel in mm: 13.5 Testing: 1st rack travel in: 10.20 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1425...1455 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 9...17 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 7.5 Testing: Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 7.40...7.60 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.20...11.30 2nd speed rpm : 900 Rack travel in m: 11.90...12.10 3rd speed rpm : 600 Rack travel in m: 12.40...12.60 START CUT-OUT Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 900 Del.quantity cm3/ : 77.0...80.0 1000 s: (74.5...82.5) Spread cm3 : 5.00 1000 s: (7.0) Speed rpm : 600 Del.quantity cm3/ : 70.0...73.0 1000 s: (67.5...75.5)

Spread cm3 : 5.00 1000 s: (7.00)

RACK STOP ADJUSTMENT

Speed rpm : 550

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
 1000 s: (77.0...93.0)

LOW IDLE

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 7,2 L 1 Edition : 05.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 456 101 Injection pump Pump designation : PES6MW100/321RS1153 EP type number : 0 413 406 145 Governor Governor design. : RQ250/1300MW84 Governer no. : 0 420 082 029 Customer-spec. information Customer : MAN Engine : D 0826 LF : 165.0 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15)

firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1300 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 13.2...13.4 100 s: (13.0...13.6) Spread cm3 : 0.3100 s: (0.6) rpm : 250.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1440 travel mm : 8.70...9.10 2nd speed rpm : 1350 travel mm : 6.30...6.50 3rd speed rpm : 350 travel mm : 4.00...4.60 4th speed rpm : 250 travel mm : 2.10...2.50 GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 Del.quantity : 132.0...136.0)

Prestroke mm

1st version

Control lever

position degrees: 26...34

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.90

rpm : 1345...1360 Speed

2nd rack travel in: 4.00

rpm : 1425...1455 Speed

4th rack travel in: 1530

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Setting point w/out bumper spring

rpm : 250°

Rack travel in mm: 4.6

Testing:

Speed rpm : 100 Minimum rack trave: 7.00

Speed rpm : 250 Rack travel in mm : 4.50...4.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 180

Rack travel mm : 9.50...9.60

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.30 2nd pressure hPa : 390

Rack travel in m: 10.90...11.20

3rd pressure hPa : 1000

Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

D19

rpm : 800 Speed

Del.quantity cm3/: 128.0...131.0

1000 s: (125.5...133.5)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 74.5...76.5 1000 s: (72.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed Cpm : 100

Del.quantity cm3/: 140.0...150.0

1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.50...4.70 Del.quantity cm3/ : 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 7,2 L Edition : 05.08.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 456 102 Injection pump Pump designation : PES6MW100/321RS1153 EP type number : 0 413 406 145 Governor Governor design. : RQV250...1300MW83 Governer no. : 0 420 083 139 Customer-spec. information Customer : MAN Engine : D 0826 LF 1st version kW : 165.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar : 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1300 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 13.2...13.4 100 s: (13.0...13.6) Spread cm3 : 0.3 100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 : 9.40...9.80 travel mm rpm : 1350 2nd speed travel mm : 8.40...8.60 3rd speed rpm : 500 travel mm : 2.70...3.30 rpm : 250 4th speed travel mm : 0.80...1.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1320 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 1000 Del.quantity : 132.0...134.0 1000 : (130.0...136.0) Spread cm3 : 3.50 1000 : (6.00)

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15)

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 10.90

Speed rpm : 1345...1360

2nd rack travel in: 4.00

Speed rpm : 1450...1480

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm: 4.8

Testing:

Speed rpm : 100

Minimum rack trave: 6.50 rpm : 250 Speed

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 330...420

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 Speed

Pressure hPa : 180

Rack travel mm : 9.50...9.60

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.30

2nd pressure hPa : 390

Rack travel in m: 10.90...11.20

3rd pressure hPa : 1000

Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 170 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 800

D21

Del.quantity cm3/: 128.0...131.0

1000 s: (125.5...133.5) cm3 : 5.00

Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 74.5...76.5

1000 s: (72.5...78.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 : (3.45...3.65) Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : CUM 8,3 C Test sheet Edition : 06.04.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 466 101 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6MW100/120RS1137 EP type number : 0 413 406 131 BASIC SETTING Governor Governor design. : RSV400...1250MW2A319 Governer no. : 0 420 085 059 1st speed rpm : 1250 Rack travel in mm : 14.00...14.10 Customer-spec. information Customer : CUMMINS/US Del.quantity cm3/: 14.4...14.6 Engine : 6 CTA-8.3 L 100 s: (14.2...14.8) 1st version kW : 188.0 Spread cm3 : 0.3Rated speed : 2500 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 400.0 Test oil Rack travel in mm: 7.9...8.0 inlet temp. OC : 38...42 Del.quantity cm3/: 1.9...2.3 100 s: (1.6...2.5) Overflow valve Spread cm3 : 0.3: 1 417 413 047 100 s: (0.5) Inlet press., bar : 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 017 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0.6 Speed rpm : 1250 : 144.5...146.5 Del.quantity 1000 : (142.5...148.5) Test lines : 1 680 750 008 : 3.50 Spread cm3 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED : 6.00x2.00x600 x Length mm 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 50...58 Set equal delivery quant. per values ____ Setting point: Speed rpm : 800 BEGINNING OF DELIVERY Rack travel in mm: 0.6 Test pressure, bar: 30...32 Testing:

1st rack travel in: 13.00 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 Speed rpm : 1380...1410 4th rack travel in: 1450

LOW IDLE 1

Speed rpm : 0.30...1.70

Control lever position degrees: 18...26 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 7.9

Testing: Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 7.90...8.00

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 133.5...137.5

1000 s: (131.5...139.5)

cm3 : 5.00 Spread 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed : 100 Lbw

Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm: 7.90...8.00 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5)

cm3 : 3.50

1000 s: (5.50)

Spread

Remarks:

D23

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Starting/full-load transition speed from holding magnet = 500 1/min.

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C 1 Edition : 06.04.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 466 102

Injection pump

: PES6MW100/120RS1137 Pump designation

: 0 413 406 131 EP type number

Governor

Governor design. : RSV425...1050MW2A319

-1

: 0 420 085 061 Governer no.

Customer-spec. information

Customer : CUMMINS/US

: 6 CTA-8.3 L Engine

1st version kW : 178.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. ^oC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Firing order

Prestroke mm

: 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4

Phasing

: 0-60-120-180-240-300

Tolerance + - 0

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 13.8...14.0

100 s: (13.6...14.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 425.0

Rack travel in mm: 7.7...7.8 Del.quantity cm3/: 1.9...2.3

100 s: (1.6...2.5) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

2nd speed

Speed rpm : 1050

: 138.0...140.0 Del.quantity

1000 : (136.0...142.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 34...42

Setting point:

rpm : 800 Speed Rack travel in mm: 0.6

024

Testing:

1st rack travel in: 13.00

Speed rpm : 1095...1105

2nd rack travel in: 4.00

Speed rpm : 1150...1180

3rd rack travel in: 4.00 Speed rpm : 1165...1195

4th rack travel in: 1250

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 12...20

Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm: 7.7

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 425 Rack travel in mm : 7.70...7.80

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 14.00...14.10

2nd speed rpm : 750 Rack travel in m: 14.40...14.50

3rd speed rpm : 900

Rack travel in m: 14.10...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 138.5...140.5 1000 s: (136.5...142.5)

cm3 : 5.00 Spread 1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...145.0

1000 s: (122.0...148.0)

025

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed

Speed rpm : 425 Rack travel in mm : 7.70...7.80 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) Spread cm3: 3.50

1000 s: (5,50)

:

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery,

cylinder 1 Starting/full-load transition speed

from holding magnet = 500 1/min.

Adjust stop lever to 0.5...1.0 mm

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

%öte remarks

: CUM 8,3 C 3 Test sheet Edition : 06.04.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 466 104

Injection pump

Pump designation : PES6MW100/120RS1137

EP type number : 0 413 406 131

Governor

Governor design. : RSV400...1050MW2A319

Governer no. : 0 420 085 074

Customer-spec. information

Customer : CUMMINS/US

: 6 CTA-8.3 L Engine

1st version kW : 165.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm: 6.9...7.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 124.0...126.0 1000 : (122.0...128.0)

: 3.50 cm3

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Setting point:

Lbw : 800 Rack travel in mm: 0.6

026

Testing:

1st rack travel in: 11.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1250 Speed rpm: 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 6.9

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 6.90...7.00

SET IDLE AUXILIARY SPRING

Rack travel in mm: 4.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.10...12.20

2nd speed rpm : 750

Rack travel in m: 14.20...14.30

3rd speed rpm : 900

Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 151.0...153.0

1000 s: (149.0...155.0)

cm3 : 5.00Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 125.0...145.0 1000 s: (122.0...148.0) Rack travel in mm : 19.00...21.00

D27

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.90...7.00 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

cylinder 1

Starting/full-load transition speed

from holding magnet = 500 1/min.

Adjust stop lever to 0.5...1.0 mm

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MMM 6,2 F Test sheet Edition : 25.03.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 466 108 Injection pump Pump designation : PES6MW100/320/3RS116 : 0 413 406 149 EP type number Governor Governor design. : RSV325...1200MWDA326 Governer no. : 0 420 085 085 Customer-spec. information Customer Engine : TD 226 B-6 1st version kW : 136.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar : 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar *:* 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 30...32 : 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm: 6.6...6.7 Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: 3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

FULL LOAD DÉLIV. AT FULL LOAD STOP

1st version Speed rpm : 1200 Aneroid pressure h: 700

Del. quantity : 116.5...118.5 1000 : (114.5...120.5) cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 40...48

Setting point:

rpm : 800 Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.40

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1260...1300 4th rack travel in: 1380 Speed rpm : 0.30...1.70 5th rack travel in: 1295...1325 Speed rpm : 4.00 LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.6 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 325 Rack travel in mm : 6.60...6.70 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.40...10.50 2nd speed rpm : 800 Rack travel in m: 10.60...10.70 3rd speed rpm : 500 Rack travel in m: 10.70...10.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -Rack travel mm : 8.50...8.60 Measurement Speed 1/min : 500 1st pressure hPa : 270 Rack travel in m: 9.10...9.20 2nd pressure hPa : 450 Rack travel in m: 9.90...10.20 3rd pressure hPa : 700 Rack travel in m: 10.60...10.70 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 62.5...64.5 1000 s: (60.5...66.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.60...6.70 Del.quantity cm3/: 8.0...12.0 1000 s: (6.0...14.0) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

E01

Spread

Speed

Aneroid pressure h: 700

Aneroid pressure h: -

Speed rpm : 800 Del.quantity cm3/ : 113.5...116.5

cm3 : 5.00

1000 s: (7.0)

rpm : 500

1000 s: (110.5...118.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : CUM 8,3 H Edition : 16.05.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 466 109 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6MW100/120RS1137~ BASIC SETTING EP type number : 0 413 406 157 Governor 1st speed rpm: 750 : RSV400...1100Mw2A319 Governor design. Rack travel in mm : 14.00...14.10 Governer no. : 0 420 085 080 Del.quantity cm3/: 15.0...15.2 Customer-spec. information Customer : CUMMINS/US 100 s: (14.8...15.4) Engine : 6 CTA-8.3 Spread cm3 : 0.3Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 400.0 Test oil Rack travel in mm: 7.0...7.1 inlet temp. OC : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve Spread cm3 : 0.3: 9 410 270 183 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 017 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0.6 Speed rpm : 750 Deliquantity : 150.5...152.5 1000 : (148.5...154.5) Test lines : 1 680 750 008 : 3.50 Spread cm3 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x2.00x600 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 40...48 Set equal delivery quant. per values Setting point: rpm : 800 Speed BEGINNING OF DELIVERY Rack travel in mm: 0.6 Test pressure, bar: 30...32

Testing:

1st rack travel in: 10.90 Speed rpm : 1150...1160 2nd rack travel in: 4.00 Speed rpm : 1200...1230 4th rack travel in: 1300 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever position degrees: 16...24

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 7.0

Testing:

Speed ` rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 7.00...7.10

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 14.00...14.10 2nd speed rpm : 1100 Rack travel in m: 12.30...12.50 3rd speed rpm : 950

Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0)

cm3 : 5.00 Spread

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100 bel.quantity cm3/ : 125.0...145.0 1000 s: (122.0...148.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

E03

Speed rpm : 400

Rack travel in mm : 7.00...7.10 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Start-of-delivery mark 110 cam angle after start of delivery cyl. 1

Starting/full-load transition speed from holding magnet = 500 1/min.

Adjust stop lever to 0.5...1.0 mm before stop. Set 11.9...12.0 mm control-rod travel at lower full-load stop with n = 1000 1/min. Make full-load setting at upper fullload stop in accordance with test specifications.

EOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1- 3- 4- 2 Note remarks Test sheet : MB 4,0 A 28 Phasing : 0-90-180-270 Edition : 12.08.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 474 002 1st speed rpm : 1200 Injection pump Pump designation : PES4MW100/720RS1127 Rack travel in mm : 11.30...11.40 EP type number : 0 413 404 103 Governor Del.quantity cm3/ : 7.1...7.3 Governor design. : RSV350...1200MW0A330 Governer no. : 0 420 085 101 100 s: (6.9...7.5) Customer-spec. information Spread cm3 : 0.3Customer : DB 100 s: (0.6) Engine : 0M364A 2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.2 1st version kW : 66.0 Rated speed : 2400 Del.quantity cm3/: 0.7...0.9 100 s: (0.4...1.2) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. OC : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 047 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 4.00 assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 172...175 1st version rpm : 1200 : 71.0...73.0 Speed Del.quantity Test lines : 1 680 750 015 1000 : (69.0...75.0) cm3 : 3.50Spread Outside diameter 1000 : (6.00) x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version insp. values in parentheses Control lever Set equal delivery quant. position degrees: 48...56 per values ____ Setting point: BEGINNING OF DELIVERY rpm : 800 Test pressure, bar: 30...32 Rack travel in mm: 0.6 Prestroke mm : 3.70...3.80 Testing: : (3.65...3.85) 1st rack travel in: 10.30

Speed

rpm : 1240...1245

E04

Rack travel in mm : 9.00...12.00

2nd rack travel in: 4.00 rpm : 1283...1296 Speed 3rd rack travel in: 4.00 rpm : 1320...1350 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.70 5th rack travel in: 1240...1255 rpm : 10.30 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 7.10...7.20 Rack travel in mm: 2.00 Speed rpm : 415...475 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.30...11.40 2nd speed rpm : 600 Rack travel in m: 12.10...12.20 3rd speed rpm : 900 Rack travel in m: 11.70...11.80 4th speed rpm : 950 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 58.0...60.0 1000 s: (56.0...62.0) Speed rpm : 900
Del.quantity cm3/ : 73.0...75.0
1000 s: (71.0...77.0)
Spread cm3 : 5.00 1000 s: (7.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.30 Speed rpm : 1240...1245 STARTING FUEL DELIVERY

: 100

rom

Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

1000 s: (5.00)

Remarks:

£05

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 A 24 Edition : 11.07.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 474 005 Injection pump Pump designation : PES4MW100/720RS1127 EP type number : 0 413 404 103 Governor Governor design. : RSV350...750MWOA318-: 0 420 085 089 Governer no. Customer-spec. information Customer : DB Engine : 0M364A 1st version kW : 63.0 Rated speed : 1500 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm: 13.40...13.50

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 91.0...93.0 Del.quantity 1000 : (89.0...95.0)

cm3 : 3.50Spread 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.40 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 780...793 4th rack travel in: 950

Speed rpm : 0.30...1.40 LOW IDLE 1

Control lever position degrees: 11...19

Setting point wout bumper spring

rpm : <u>3</u>50 Rack travel in mm: 7.5

Speed rpm : 350 Rack travel in mm : 7.50...7.60

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.50...7.70 Del.quantity cm3/: 9.0...13.0 1000 s: (7.0...15.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

When setting the governor, the throttle screw of damper 1 must be open 1 turn.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 R 5 : 06.04.88 Test sheet Edition : 19.02.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 024 Injection pump Pump designation : PES6MW100/320RS1121 EP type number : 0 413 406 115 Governor Governor design. : RSV450...1200MW2A313 Governer no. : 0 420 085 040 Customer-spec. information Customer : NAVISTAR Engine : DTI-466C 1st version kW : 175.2 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 037 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 016 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0.5 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 12.2...12.4 100 s: (12.0...12.6) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 450.0 Rack travel in mm : 5.7...5.8 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 899 Speed Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 Del.quantity : 122.0...124.0 1000 : (120.0...126.0) cm3 : 3.50Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 45...50 Setting point: rpm : 800 Speed Rack travel in mm: 0.6 Testing:

: 4.00...4.10

Prestroke mm

E08

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

1st rack travel in: 10.90 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1320...1330 4th rack travel in: 1400 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 450 Rack travel in mm: 5.7 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 450 Rack travel in mm : 5.70...5.80 SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.90...12.00 2nd speed rpm : 1150 Rack travel in m: 11.90...12.00 3rd speed rpm : 800 Rack travel in m: 12.30...12.40 4th speed rpm : 600 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : 900 Rack travel mm : 12.30...12.40 Measurement Speed 1/min : 500 1st pressure hPa : 260 Rack travel in m: 11.10...11.20 2nd pressure hPa : 540 Rack travel in m: 11.90...12.00 3rd pressure hPa : -Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 1200

E09

Del.quantity cm3/: 118.0...120.0 1000 s: (116.0...122.0) Spread cm3 : 6.501000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 91.0...93.0 1000 s: (89.0...95.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 Speed rpm : 1240...1250 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0) LOW IDLE Speed rpm : 450 Rack travel in mm : 5.70...5.80 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) cm3 : 3.50 1000 s: (5.00) Spread Remarks: : Perform pump setting only with IH hose with restriction of 1.2 mm diameter. Before checking sleeve position, first adjust latching. Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.) Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 R 3 Edition : 06.04.88 Replaces : 19.02.88 Test oil : ISO-4113 Combination no. : 0 403 476 025 Injection pump Pump designation : PES6MW100/320RS1121 EP type number : 0 413 406 115 Governor Governor design. : RSV450...1200MW2A313 -2 Governer no. : 0 420 085 041 Customer-spec. information Customer : NAVISTAR Engine : DTI-466C 1st version kW : 156.6 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 037 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 016 Opening : 172...175 pressure, bar Orifice plate diameter mm : 0.5 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values

per values ____

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 10.8...11.0 100 s: (10.6...11.2) Spread cm3 : 0.3100 s: (0.6) rpm : 450.0 2nd speed Rack travel in mm : 4.8...4.9 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 Aneroid pressure h: 900 Del.quantity : 108.5...110.5 1000 : (106.5...112.5) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 49...54 Setting point: Speed rpm : 800 Rack travel in mm: 0.6 Testing:

1st rack travel in: 8.90 Speed rpm : 1260...1270 2nd rack travel in: 4.00 Speed rpm : 1355...1365

4th rack travel in: 1400 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 21...29 Setting point w/out bumper spring

Speed rpm : 450 Rack travel in mm : 4.8

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 450 Rack travel in mm : 4.80...4.90

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

TORQUE CONTROL Torque control curve - 1st version

1st speed rpm : 1200 Rack travel in m: 9.90...10.00

2nd speed rpm : 850

Rack travel in m: 10.60...10.70 3rd speed rpm : 800

Rack travel in m: 10.30...10.70

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 10.60...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 320

Rack travel in m: 9.30,...9.40

2nd pressure hPa : 570

Rack travel in m: 10.20...10.30

3rd pressure hPa : -

Rack travel in m: 9.00...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1200

Del.quantity cm3/: 102.5...104.5

1000 s: (116.0...122.0)

Spread cm3 : 6.50 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 78.0...80.0 1000 s: (76.0...82.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450

Rack travel in mm : 4.80...4.90 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 R 2 Edition : 06.04.88 Replaces : 19.02.88 Test oil : ISO-4113 Combination no. : 0 403 476 026 Injection pump Pump designation : PES6MW100/320RS1122 EP type number : 0 413 406 116 Governor : RSV350...1050MW2/312 Governor design. -4 Governer no. : 0 420 085 042 Customer-spec. information Customer : NAVISTAR Engine : DT 466 1st version kW : 118.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 037 Inlet press., bar : 2.80 Test nozzle holder assembly : 1 688 901 016 Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0.5 Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 6.2...6.3 Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700 Speed

: 102.0...104.0 Del.quantity

1000 : (100.0...106.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version Control lever

position degrees: 38...44

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1155...1165

4th rack travel in: 1200 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 15...24

Setting point w/out bumper spring

rpm : 350' Speed ` Rack travel in mm: 6.2

Testing:

Speed " rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 6.20...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.90...12.00

2nd speed rpm : 700

Rack travel in m: 13.00...13.10

3rd speed rpm : 600

Rack travel in m: 13.30...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1050 Speed

Del.quantity cm3/: 91.0...93.0

1000 s: (88.0...96.0)

Spread cm3 : 6.50 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.20...6.30

Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 50 Edition : 05.08.88

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 027

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1300MW0A316

: 0 420 085 098 Governer no.

Customer-spec. information

Customer

Engine : 0M366A

1st version kW : 125.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-69-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.2...7.4

100 s: (7.0...7.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.1

100 s: (0.7...1.3)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300 : 72.0...74.0 Del.quantity

1000 : (70.0...76.0) cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

rpm : 800 Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.70

£16

rpm : 1340...1345 Speed 2nd rack travel in: 4.00 Speed rpm : 1377...1390 3rd rack travel in: 4.00 Speed rpm : 1400...1430 4th rack travel in: 1450 Speed rpm : 0.30...1.70 Sth rack travel in: 1345...1360 Speed rpm : 9.70 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 7.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00 Speed rpm : 445...505 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.70...10.80 2nd speed rpm : 700 Rack travel in m: 12.30...12.40 3rd speed rpm : 825 Rack travel in m: 11.90...12.10 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/ : 69.0...71.0 1000 s: (67.0...73.0) Spread cm3 : 5.001000 s: (7.0) Speed rpm : 825 Del.quantity cm3/ : 73.0...75.0 1000 s: (71.0...77.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1340...1345 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 Note remarks : (3.95...4.15) Rack travel in mm : 9.00...12.00 : IHC 7,6 P 4 : 06.04.88 Test sheet Firing order : 1-5- 3- 6- 2- 4 Edition Replaces : 19.02.88 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 030 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PES6MW100/320RS1109 Time to cyl. no. : 1 EP type number : 0 413 406 104 Governor BASIC SETTING Governor design. : RSV350...1250MW2/313 1st speed rpm : 800 : 0 420 085 049 Governer no. Rack travel in mm : 13.40...13.50 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 11.6...11.8 Engine : DTI-466 C 100 s: (11.4...12.0) 1st version kW : 160.0 Spread cm3 : 0.3Rated speed : 2500 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 6.3...6.4 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.8...2.3 100 s: (1.6...2.5) Overflow valve cm3 : 0.3Spread : 2 417 413 037 100 s: (0.5) Inlet press., bar : 2.80 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 016 assembly Speed rpm : 800 Rack travel in mm : 0.30...1.00 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0.5 Speed rpm : 800 Aneroid pressure h: 900 Del.quantity : 116.5...118.5 Test lines 1000 : (114.5...120.5) : 1 680 750 008 cm3 : 3.50 Spread Outside diameter 1000 : (6.00) x Wall thickness x Length mm : 6.00X2.00X600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 52...57 per values ___ Setting point: BEGINNING OF DELIVERY rpm : 800 Speed Test pressure, bar: 30...32 Rack travel in mm: 0.6

Testing: 1st rack travel in: 11.20 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1390...1400 4th rack travel in: 1470 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.30...6.40 SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 800 Rack travel in m: 13.40...13.50 2nd speed rpm : 1250 Rack travel in m: 12.20...12.30 3rd speed rpm : 840 Rack travel in m: 13.40...13.50 4th speed rpm : 1200
Rack travel in m: 12.20...12.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 Low hPa : 900 Pressure Rack travel mm : 13.40...13.50 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 11.40...11.50 2nd pressure hPa : 200 Rack travel in m: 11.80...11.90 3rd pressure hPa : 490 Rack travel in m: 12.70...13.00 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 900 Speed rpm : 1250 Del.quantity cm3/ : 105.0...107.0 1000 s: (103.0...109.0) Spread cm3 : 6.501000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 82.0...84.0 1000 s: (79.0...87.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 18.0...23.0 1000 s: (16.5...25.5) Spread cm3 : 3.501000 s: (5.50) Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: IHC 7,6 R 4 Test sheet Edition : 06.04.88 Replaces : 19.02.88 Test oil : ISO-4113

Combination no. : 0 403 476 047

Injection pump

Pump designation : PES6MW100/320RS1121

EP type number : 0 413 406 115

Governor

Governor design. : RSV500...1250MW2/312

Governer no. : 0 420 085 058

Customer-spec. information Customer : NAVISTAR

Engine : DTI-466C

1st version kW : 167.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder

assembly : 1 688 901 016

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10

: (3.95...4.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

ist speed rpm : 950

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rom : 500.0 Rack travel in mm: 5.4...5.5 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

: 108.0...110.0 Del.quantity 1000 : (106.0...112.0) : 3.50

cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 50...55

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.30

E21

Speed rpm : 1315...1325

2nd rack travel in: 4.00

rpm : 1370...1380 Speed

4th rack travel in: 1400

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point w/out bumper spring

Speed rpm : 500 Rack travel in mm : 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 500

Rack travel in mm : 5.40...5.50

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1250

Del.quantity cm3/: 110.5...114.5 1000 s: (108.5...116.5)

cm3 : 6.50Spread

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1315...1325

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 500 Rack travel in mm : 5.40...5.50 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50

Spread

1000 s: (5,00)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Check hydraulic latching of starting fuel delivery with 1.5 bar air.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 R16 Edition : 06.04.88 Replaces : 24,08,87 Test oil : ISO-4113

Combination no. : 0 403 476 050

Injection pump

Pump designation : PES6MW100/320RS1121

EP type number : 0 413 406 115

Governor

Governor design. : RSV500...1250MW2A312

-6 : 0 420 085 063 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT-466 C Engine

1st version kW : 160.3 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder

: 1 688 901 016 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.5

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm: 6.2...6.3 Del.quantity cm3/ : 1.8...2.2

100 s: (1.3...2.6) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 108.0...110.0 1000 : (106.0...112.0)

: 3.50 Spread Cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 49...54

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.60

E23

rpm : 1295...1305 Speed 2nd rack travel in: 4.00

rpm : 1365...1375 Speed

4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rom : 500` Rack travel in mm: 6.2

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 500

Rack travel in mm : 6.20...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1250

Del.quantity cm3/: 107.0...111.0 1000 s: (105.0...113.0)

cm3 : 6.50 Spread

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60

rpm : 1295...1305 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1365 Del.quantity cm3/ : 15.0...23.0 1000 s: (14.0...24.0)

LOW IDLE

Speed rpm : 500

Rack travel in mm : 6.20...6.30

E24

Del.quantity cm3/: 18.0...22.0 1000 s: (13.5...26.5) Spread cm3: 3.50

1000 s: (5.00)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position,

first adjust latching.

Start-of-delivery mark: stop lever 250 toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.00...4.10 Prestroke mm : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : IHC 7,6 R19 Edition : 06.04.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 051 Tolerance + - 0 : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1121 EP type number : 0 413 406 115 1st speed rpm : 800 Governor Governor design. : RSV350...1200MW2A321 Rack travel in mm : 9.50...9.60 Governer no. : 0 420 085 064 Del.quantity cm3/: 6.8...7.0 Customer-spec. information Customer : NAVISTAR 100 s: (6.6...7.2) Engine : DT-466 C Spread cm3 : 0.31st version kW : 93.0 100 s: (0.6) Rated speed : 2400 rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.5...6.6 Del.quantity cm3/: 1.8...2.2 Test oil 100 s: (1.5...2.4) inlet temp. OC : 38...42 cm3 : 0.3Spread 100 s: (0.5) Overflow valve : 2 417 413 037 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar : 2.80 Degree: -3 Speed rpm : 800 Test nozzle holder Rack travel in mm : 0.30...1.00 assembly : 1 688 901 016 FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version Speed rpm : 800 Orifice plate Del.quantity : 68.0...70.0 diameter mm 1000 : (66.0...72.0) : 0.5 : 3.50 Spread cm3 1000 : (6.00) Test lines : 1 680 750 008 RATED SPEED Outside diameter x Wall thickness 1st version x Length mm : 6.00X2.00X600 Control lever position degrees: 54...59 (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. rpm : 800 Speed per values Rack travel in mm: 0.6 BEGINNING OF DELIVERY Testing: Test pressure, bar: 30...32 1st rack travel in: 7.60 Speed rpm : 1240...1260

2nd rack travel in: 4.00
Speed rpm : 1295...1305
4th rack travel in: 1400
Speed rpm : 0.30...1.70
LOW IDLE 1
Control lever

position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 350

Rack travel in mm: 6.5

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.50...6.60

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 9.50...9.60
2nd speed rpm : 1200
Rack travel in m: 8.60...8.70
3rd speed rpm : 1150

Rack travel in m: 8.80...8.90 4th speed rpm : 1050 Rack travel in m: 9.00...9.30

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 1200 Del.quantity cm3/ : 59.5...61.5 1000 s: (56.5...64.0)

Spread cm3 : 6.50 1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.60 Speed rpm : 1240...1260

STARTING FUEL DELIVERY

HIGH IDLE

1st version Speed rpm : 1305

E26

Del.quantity cm3/: 12.0...20.0

1000 s: (11.0...20.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm: 6.50...6.60 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

Spread cm3 : 3.50 1000 s: (5.00)

1000 s: 65.00

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set shutoff stop 1.5...2.0 mm before shutoff.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: IHC 7,6 R18 : 06.04.88 Test sheet Edition Replaces : 19.02.88 Test oil : ISO-4113

Combination no. : 0 403 476 053

Injection pump

Pump designation : PES6MW100/320RS1121

EP type number : 0 413 406 115

Governor

Governor design. : RSV350...1050Mw2A321

Governer no. : 0 420 085 066

Customer-spec. information Customer : NAVISTAR

: DT-466 C Engine

1st version kW : 129.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder

: 1 688 901 016 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm: 6.2...6.3 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 16.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 700

: 105.5...107.5 Del.quantity 1000 : (103.5...109.5)

cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 40...45

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

£27

Testing:

1st rack travel in: 9.70

Speed rpm : 1090...1110

2nd rack travel in: 4.00

Speed rpm : 1155...1165

4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring

rpm : 350° Rack travel in mm: 6.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.00 Speed rpm : 350

Rack travel in mm : 6.20...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.70...11.80

2nd speed rpm : 1050
Rack travel in m: 10.70...10.80
3rd speed rpm : 1000
Rack travel in m: 10.70...10.90

4th speed rpm : 900

Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm3/ : 94.5...96.5
1900 s: (91.0...100.0)

Spread cm3 : 6.50

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1090...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1155

Del.quantity cm3/: 12.0...20.0 1000 s: (11.0...21.0)

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.20...6.30

Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

cm3 : 3.50Spread

1000 s: (5.00)

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

Start-of-delivery mark: stop lever 25° toward shutoff: control-rod travel = 9...12 mm. (Free travel of stop lever must have been overcome beforehand.)

Set shutoff stop 1.5...2.0 mm before shutoff.

Position idle auxiliary spring to make contact, then turn back 1/4 rotation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 43 Edition : 05.08.88 Replaces : 19.05.88 : ISO-4113

Test oil

Combination no. : 0 403 476 054

Injection pump

Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1200MW0A316

: 0 420 085 092 Governer no.

Customer-spec. information

Customer

Engine : 0M366A

1st version kW : 115.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm : 1200 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm: 350.0 Rack travel in mm: 7.0...7.6 Del.quantity cm3/: 0.9...1.1

100 s: (0.6...1.4) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

: 78.0...80.0 Del.quantity

1000 : (76.0...82.0) cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 49...57

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.80

F01

Speed rpm : 1240...1245 2nd rack travel in: 4.00 rpm : 1285...1298 Speed 3rd rack travel in: 4.00 rpm : 1325...1355 Speed 4th rack travel in: 1450 rpm : 0.30...1.70 Speed 5th rack travel in: 1240...1255 Speed rpm : 10.80 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 7.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.00...7.60 Rack travel in mm: 2.00 rpm : 445...505 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.80...11.90 2nd speed rpm : 750 Rack travel in m: 12.30...12.40 3rd speed rpm : 1000 Rack travel in m: 11.90...12.10 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 72.0...74.0 1000 s: (70.0...76.0) Spread cm3 : 5.00 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 Speed rpm : 1240...1245 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 19.00...21.00

LOW IDLE

F02

Speed rpm : 350
Rack travel in mm : 7.00...7.60
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 6.0 D 46 : 12.08.88 Test sheet Edition Replaces : 08.06.88 Test oil : ISO-4113

Combination no. : 0 403 476 055

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1200Mw1A316

-8

: 0 420 085 097 Governer no.

Customer-spec. information Customer

Engine : 0M366A

1st version kW : 92.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 0.9...1.1

100 s: (0.6...1.4) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 62.0...64.0 1000 : (60.0...66.0)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 48...56

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 8,80

F03

rpm : 1235...1240 Speed 2nd rack travel in: 4.00 Speed rpm : 1260...1273 3rd rack travel in: 4.00 Speed rpm : 1300...1330 4th rack travel in: 1450 Speed rpm : 0.30...1.70 5th rack travel in: 1245...1260 rpm : 8.80 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 6.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 Speed rpm : 415...475 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.80...9.90 2nd speed rpm : 800 Rack travel in m: 10.70...10.80 3rd speed rpm : 950 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 61.0...63.0 1000 s: (59.0...65.0) Spread cm3 : 5.001000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.80 Speed rpm : 1235...1240 STARTING FUEL DELIVERY

Remarks:

LOW IDLE

\$peed rpm : 100
Del.quantity cm3/ : 78.0...88.0
 1000 s: (75.0...91.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6.0 D 37 : 19.05.88 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 476 056 Injection pump Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138 Governor Governor design. : RSV350...1200MW0A316 -5 Governer no. : 0 420 085 090 Customer-spec, information Customer Engine : 0M366A 1st version kW : 100.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening. pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant,
per values

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00 firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1200 Rack travel in mm : 10.20...10.30 Del.quantity cm3/: 6.9...7.1 100 s: (6.7...7.3) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm: 6.1...6.7 Del.quantity cm3/: 0.9...1.1 100 s: (0.6...1.4) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Del.quantity : 69.0...71.0 1000 : (67.0...73.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 58...66 Setting point: rpm : 800 Speed Rack travel in mm: 0.6 Testing: 1st rack travel in: 9.20 rpm : 1240...1245 Speed

2nd rack travel in: 4.00

Speed

rpm : 1271...1284

3rd rack travel in: 4.00 Speed : 1300...1330 rpm 4th rack travel in: 1450 : 0.30...1.70 Speed rpm 5th rack travel in: 1240...1255 Speed rpm : 9.20 LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.4 Testing: : 100 Speed rpm Minimum rack trave: 19.00 Speed : 350 rpm Rack travel in mm : 6.10...6.70 Rack travel in mm : 2.00 Speed rpm : 415...475 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.20...10.30 2nd speed rpm : 800 Rack travel in m: 11.10...11.20 3rd speed rpm : 900 Rack travel in m: 11.00...11.20 4th speed rpm : 1050 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/ : 69.0...71.0 1000 s: (67.0...73.0) Spread cm3 : 5.001000 s: (7.0) STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 6.10...6.70 Del.quantity cm3/: 9.0...11.0 1000 s: (6.0...14.0) cm3 : 3.50 Spread 1000 s: (5.00) Remarks:

F06

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks Test sheet : STE 6,5 E Phasing : 0-60-120-180-240-300 Edition : 11.03.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 476 058 rpm: 1100 1st speed Injection pump Pump designation : PES6MW100/720RS1145 Rack travel in mm: 13.80...13.90 EP type number : 0 413 406 141 Governor Del.quantity cm3/: 11.0...11.2 Governor design. : RSV300...1100MW1A323 Governer no. : 0 420 085 081 100 s: (10.8...11.4) Customer-spec. information Spread cm3 : 2.3 Customer : STEYR 100 s: (0.6) Engine : WD 612.96 rpm : 300.0 2nd speed 1st version kW : 121.0 Rack travel in mm: 9.0...9.1 Rated speed : 2200 Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. OC : 38 . . . 42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 047 rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder : 0 681 343 009 assembly 1st version Speed rpm : 1100 Opening Del.quantity : 110.0...112.0 pressure, bar : 172...175 1000 : (108.0...114.0) : 3.50 Spread cm3 1000 : (6.00) Test lines : 1 680 750 014 RATED SPEED Outside diameter x Wall thickness 1st version x Length mm : 6.00x2.00x600 Control lever position degrees: 49...57 (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm : 800 per values Rack travel in mm: 0.6 BEGINNING OF DELIVERY Testing: Test pressure, bar: 30...32 1st rack travel in: 12.80 Speed rpm : 1140...1150 Prestroke mm : 3.50...3.60 2nd rack travel in: 4.00 : (3.45...3.65) Speed rpm : 1205...1235 Rack travel in mm : 9.00...12.00 4th rack travel in: 1300

F07

Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 28...36 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 8.5 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 300 Rack travel in mm : 8.50...8.60 FUEL DELIVERY CHARACTERISTICS 1st version 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.80 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 110.0...130.0 1000 s: (107.0...109.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 9.00...9.10 Del.quantity cm3/: 12.0...16.0 1000 s: (10.0...18.0) Spread cm3 : 3.501000 s: (5.00) Remarks: Test electrically-released starting

quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : MB 6,0 D 38 Phasing : 0-60-120-180-240-300 Edition : 05.08.88 Replaces : 30.05.88 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 476 059 1st speed rpm : 1230 Injection pump Pump designation : PES6MW100/720RS1130 Rack travel in mm : 10.90...11.00 EP type number : 0 413 406 122 Governor Del.quantity cm3/: 7.8...8.0 Governor design. : RSV575...1250MW0A325 Governer no. : 0 420 085 083 100 s: (7.6...8.2) Customer-spec. information Spread cm3 : 0.3Customer 100 s: (0.6) Engine : OM 366 A 2nd speed rpm : 575.0 1st version kW : 125.0 Rack travel in mm : 5.6...5.7 : 2500 Del.quantity cm3/: 0.9...1.3 Rated speed 100 s: (0.7...1.5) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. OC : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 047 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder assembly : 0 681 343 009 1st version Speed rpm : 1230 Opening : 78.0...80.0 Del.quantity 1000 : (76.0...82.0) cm3 : 3.50 pressure, bar : 172...175 Spread 1000 : (6.00) Test lines : 1 680 750 015 RATED SPEED Outside diameter x Wall thickness 1st version x Length mm : 6.00x1.50x600 Control lever position degrees: 46...54 (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm : 800 per values ____ Rack travel in mm: 0.6 BEGINNING OF DELIVERY Testing: Test pressure, bar: 30...32 1st rack travel in: 9.90

Speed rpm : 1270...1275

Speed rpm : 1295...1310

2nd rack travel in: 4.00

3rd rack travel in: 4.00

F09

Prestroke mm

: 3.70...3.80

Rack travel in mm : 9.00...12.00

: (3.65...3.85)

Speed rpm : 1301...1315 4th rack travel in: 1350 Speed rpm : 0.30...1.70 5th rack travel in: 1276...1280 Speed rpm : 9.90 LOW IDLE 1 Control lever position degrees: 24...32 Setting point w/out bumper spring Speed rpm: 575 Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 575 Rack travel in mm : 5.60...5.70 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 55.0...59.0 1000 s: (53.0...61.0) Spread cm3 : 5.00 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 Speed rpm : 1270...1275 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE Speed rpm : 575
Rack travel in mm : 5.60...5.70
Del.quantity cm3/ : 9.0...13.0 1000 s: (7.0...15.0) cm3 : 3.50 Spread 1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks Test sheet : LEY 6,7 A Phasing : 0-60-120-180-240-300 Edition : 25.03.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 546 016 1st speed rpm : 1300 Injection pump Pump designation : PE6MW90/320RS1152 Rack travel in mm : 9.70...9.80 EP type number : 0 413 596 101 Governor Del.quantity cm3/: 8.6...8.8 Governor design. : RQV200...1300MW95 Governer no. : 0 420 083 150 100 s: (8.4...9.0) Customer-spec. information Spread cm3 : 0.3Customer : BRITISH-LEYLAND 100 s: (0.6) Engine : 411 rpm : 200.0 2nd speed 1st version kW : 119.0 Rack travel in mm: 6.5...6.6 Rated speed : 2600 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. OC : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 000 GUIDE SLEEVE TRAVEL 1st speed rpm : 1340 Inlet press., bar : 1.50 travel mm : 10.20...10.40 2nd speed rpm: 1430 Test nozzle holder travel mm : 11.40...11.80 : 0 681 343 009 assembly 3rd speed rpm : 200 travel mm : 0.90...1.30 Opening 4th speed rpm : 500 pressure, bar : 172...175 : 3,40,...4,00 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 014 Control-lever position Degree: -1 Outside diameter rpm : 1350 Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 6.00x2.00x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 per values Del.quantity : 86.5...88.5 1000 : (84.5...90.5) BEGINNING OF DELIVERY cm3 : 3.50Spread Test pressure, bar: 30...32 1000 : (6.00) : 3.30...3.40 Prestroke mm RATED SPEED : (3.25...3.45)

1st version

Rack travel in mm : 9.00...12.00

Control lever position degrees: 44...52 Testing: 1st rack travel in: 8.70 Speed rpm: 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1380...1410 4th rack travel in: 1480 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 8...16 Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm: 6.5 Testing: rpm : 100 Speed Minimum rack trave: 8.00 Speed rpm : 200 Rack travel in mm : 6.50...6.60 CONSTANT REGULATION rpm : 270...350 Speed START CUT-OUT Speed 1/min : 150 (170) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500

Del.quantity cm3/: 74.5...78.5 1000 s: (72.5...80.5) Spread cm3 : 5.00 1000 s: (7.0)

BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 8.70 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 110.9...120.0

1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 200

F12

Rack travel in mm : 6.50...6.60 Del.quantity cm3/: 18.0...22.0

1000 s: (15.5...24.5) cm3 : 3.50

:

Spread 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 13,4 D1 Edition : 11.07.88 Replaces : 25.03.88 Test oil : ISO-4113 Combination no. : 0 403 548 013 Injection pump Pump designation : PE8MW100/720LS1117 EP type number : 0 413 508 101 Governor Governor design. : RQV425...900MW66 Governer no. : 0 420 083 097 Customer-spec. information Customer : KHD Engine : F 8L 513 OPT. 1st version kW : 153.0 : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar : 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 30...32

Firing order : 1-8-7-2-6-5-4- 3 Phasing : 0-45-90-135-180-225-270-315 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 10.7...10.9 100 s: (10.5...11.1) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 425.0 Rack travel in mm : 7.4...7.5 Del.quantity cm3/: 1.3...1.7 100 s: (1.1...2.0) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 940 travel mm : 8.70...8.90 2nd speed rpm : 990 travel mm : 9.40...10.00 3rd speed rpm : 550 : 3.20...4.00 travel mm 4th speed rpm : 425 travel mm : 1.40...2.20 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 900 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed : 107.0...109.0 Del.quantity 1000 : (105.0...111.0) cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

: (3.05...3.25) | Rack travel in mm : 9.00...12.00 |

: 3.10...3.20

F13

Prestroke mm

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.50 Speed rpm: 930...940

2nd rack travel in: 4.50 Speed rpm : 980...1010

4th rack travel in: 1100 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 20...28 Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 7.4

Testing:

Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm : 425

Rack travel in mm : 7.40...7.50

CONSTANT REGULATION

Speed rpm : 450...750

TORQUE CONTROL

Torque control curve - 1st version 1st speed rpm : 900

Rack travel in m: 12.50...12.60

2nd speed rpm : 675 Rack travel in m: 13.00...13.10

3rd speed rpm : 775

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 675

Del.quantity cm3/: 111.5...113.5 1000 s: (109.5...115.5)

Spread cm3 : 5.00

1900 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 930...940

STARTING FUEL DELIVERY

Speed rpm : 100

F14

Del.quantity cm3/: 130.0...140.0

1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 425

Rack travel in mm: 7.40...7.50 Del.quantity cm3/: 13.0...17.0 1000 s: (11.0...20.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 13,4 D7 : 11.03.88 Edition Replaces Test oil : 13.05.87 : ISO-4113 Combination no. : 0 403 548 020 Injection pump Pump designation : PE8MW100/720LS1128 EP type number : 0 413 508 103 Governor Governor design. : RQV300...1150MW56-1 Governer no. : 0 420 083 125 Customer-spec. information Customer : KHD Engine : BF 8L 513 1st version kW : 235.0 : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

Firing order : 1- 8- 7- 2- 6- 5-Phasing : 0-45-90-135-180-225-270-315 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1150 Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 14.1...14.3 100 s: (13.9...14.5) Spread cm3 : 0.3100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm : 6.5...6.6 Del.quantity cm3/ : 1.3...1.7 100 s: (1.1...1.9) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1280 travel mm : 9.00...9.80 2nd speed rpm : 1150 travel mm : 6.60...6.80 3rd speed rpm : 650 travel mm : 5.80...6.20 4th speed rpm : 300 travel mm : 1.20...2.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 900 Del.quantity : 141.0...143.0 1000 : (139.0...145.0) cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.10...3.20

: (3.05...3.25)

1st version Control lever

position degrees: 50...58

Setting point:

Speed rpm : 1175 Rack travel in mm: 16.5

Testino:

1st rack travel in: 11.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1370

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 300° Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 8.10 rpm : 300 Speed

Rack travel in mm : 6.50...6.60

CONSTANT REGULATION

Speed rpm : 320...400

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.80...12.90

2nd speed rpm : 700

Rack travel in m: 13.80...13.90

3rd speed rpm : 950

Rack travel in m: 13.10...13.40

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 480 Pressure

Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.70...11.80 2nd pressure hPa : 330

Rack travel in m: 12.50...12.80

3rd pressure hPa : 900

F16

Rack travel in m: 13.80...13.90

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 700 Speed

Del.quantity cm3/: 153.0...155.0

1000 s: (151.0...157.0)

cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 450 Del.quantity cm3/ : 107.0...109.0 1000 s: (105.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...150.0

1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.50...6.60 Del.quantity cm3/: 13.0...17.0

1900 s: (11.0...19.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Test electrically-released starting

quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 13,4010 Edition : 11.03.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 548 023 Injection pump Pump designation : PE8MW100/720LS1128 EP type number : 0 413 508 103 Governor Governor design. : RQV300...1150MW56-3 Governer no. : 0 420 083 154 Customer-spec. information Customer : KHD Engine : BF 8L 513 1st version kW : 225.0 Rated speed : 2300 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening. pressure, bar : 172...175 Test lines : 1 680 740 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY

Firing order : 1- 8- 7- 2- 6- 5-Phasing : 0-45-90-135-180-225-270-315 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1150 Rack travel in mm : 12.60...12.70 Del.quantity cm3/: 13.9...14.1 100 s: (13.7...14.3) Spread cm3 : 0.3100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm : 6.5...6.7 Del.quantity cm3/: 1.3...1.7 100 s: (1.1...1.9) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1200 travel mm : 8.50...8.70 2nd speed rpm : 1290 travel mm : 9.60...10.00
3rd speed rpm : 600 : 4.10...4.30 travel mm 4th speed rpm : 300 travel am : 1.40...1.80 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Aneroid pressure h: 800 Del.quantity : 139.0...141.0 1000 : (137.0...143.0) Spread cm3 : 3.501000 : (6.00)

RATED SPEED

F17

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.10...3.20

: (3.05...3.25)

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.60

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1380

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 300° Rack travel in mm: 6.6

Testing:

rpm : 100 Speed Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 310...420

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 12.60...12.70

2nd speed rpm : 650 Rack travel in m: 13.50...13.60

3rd speed rpm : 940

Rack travel in m: 13.00...13.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 480 Pressure

Rack travel mm : 13.00...13.10

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.70...11.80

2nd pressure hPa : 380

Rack travel in m: 12.20...12.50

3rd pressure hPa : 800

Rack travel in m: 13.50...13.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 650 Del.quantity cm3/ : 150.0...152.0

1000 s: (148.0...154.0)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm3/: 107.0...109.0

1000 s: (105.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...150.0

1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 13.0...17.0

1000 s: (11.0...19.0) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

Note remarks

Test sheet : MB 5.7 x : 16.08.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 083 256

Injection pump

Pump designation : PES6A8OC41ORS2239Y

Governor

Governor design. : RQV300...1475AB762DL

Customer-spec. information

Customer : DAINLER-BENZ

Engine : 0M 352

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 686 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,15...2,25

: (2,10...2,30)

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240

Tolerance + - 0 : 0,5 (0,75)

F19

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00...9,10

Del.quantity cm3/: 4,35...4,85

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 1000 2nd speed

Rack travel in mm : 15,00...15,10 Del.quantity cm3/: 10,25...11,65

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

rpm : 200 3rd speed

Rack travel in mm : 6,00...6,10 Del.quantity cm3/ : 2,45...3,45

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1475

Rack travel in mm : 16,00...18,90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1450

: 45,5...47,5 Del.quantity

1000 : (-)

: 2,5 Spread cm3

1000 : (4,0)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 20,00

Speed rpm : 1515...1525

2nd rack travel in: 5,10

Speed rpm : 1680...1720

4th rack travel in: 1800

rpm : 0,00...3,00 Speed

5th rack travel in: 1850 rpm : <0.00 Speed

LOW IDLE 1

Control lever

position degrees: 6...14

1st version

: 1000 Speed rpm Del.quantity cm3/: 45,5...48,5 1000 s: (-) Spread cm3 : 3,5 1000 s: (4,5) rpm : 800 Speed Del.quantity cm3/: 45,0...48,0 1000 s: (-) cm3 : 3,5 Spread 1000 s: (4,5)

: 50Ó Speed rpm Del.quantity cm3/: 41,0...44,5 1000 s: (-)

cm3 : 3,5 Spread 1000 s: (4,5)

BREAKAWAY

1st version

rpm : 1475...1500 Speed

STARTING FUEL DELIVERY

rpm : 100

Rack travel in mm : 14,20...14,80

Note remarks

Test sheet : MB 5,7 i14 : 16.08.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 084 258

Injection pump

Pump designation : PES6A80D410RS2085Y

Governor

Governor design. : RSV350...1300A2B713D

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M 352

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 900

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6,00X2,00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25 : (2.10...2.30) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240 Tolerance + - 0 : 0,5(0,75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 9,00...9,10

Del.quantity cm3/: 4,55...4,85

100 s: (-)

cm3 : 0,25 Spread

100 s: (0,40)

2nd speed грт : 1000

Rack travel in mm : 15,00...15,10

Del.quantity cm3/: 10,45...10,85

100 s: (-)

Spread cm3 : 0.25

100 s: (0,40)

rpm : 200 3rd speed

Rack travel in mm : 9,00...9,10 Del.quantity cm3/ : 2,65...3,45

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1620 Rack travel in mm : 0,00...1,00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del.quantity : 48,0...49,0

1000 : (46,5...50,5)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 7.90 Speed rpm : 1385...1415

2nd rack travel in: 3,70

Speed rpm : 1480...1520

5th rack travel in: 1620

Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm: 7.50 Testing: Speed : 100 rpm Minimum rack trave: 19,00 Speed rpm: 350
Rack travel in mm: 7,30...7,70
Rack travel in mm: 2,50
Speed rpm: 620...680 Speed rpm : 780 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1280 Rack travel in m: <0,00 2nd speed rpm : 1000 Rack travel in m: 0,30...0,50 3rd speed rpm : 800 Rack travel in m: 0,70...0,90 4th speed rpm : 500 Rack travel in m: 0,80...1,00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1000 Del.quantity cm3/: 46,5...48,5 1000 s: (44,5...50,5) : 800 Speed rpm Del.quantity cm3/: 45.5...47.5 1000 s: (43.5...49.5) Speed rpm : 500 Del.quantity cm3/: 42,5...44,5 1000 s: (40,5...46,5) BREAKAWAY 1st version Speed rpm : 1310...1330 STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 14,20...18,20 Remarks: **APPLICATION** Navy

Note remarks

Test sheet : MMM 3,9 64 : 15.08.88 Edition

Replaces Test oil

: ISO-4113

Combination no. : 9 400 085 221

Injection pump

Pump designation : PES4A80D320RS1282

Governor

Governor design. : RSV350...1500A2B2074

Customer-spec. information Customer : MMM

Engine : D 229-4

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 046

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,20...2,30 : (2,15...2,35)

Rack travel in mm : 9,00...12,00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing Phasing : 0-90-180-Tolerance + - 0 : 0,5(0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9,00...12,00

& maximum rack tra: 21,00 Difference CS: 4...5

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 9,10...9,20

Del.quantity cm3/: 5,1...5,2

100 s: (5,0...5,4)

Spread cm3 : 0.25

100 s: (0,40)

rpm : 350 2nd speed

Rack travel in mm : 6,90...7.10 Del.quantity cm3/ : 1,2...1,5

100 s: (1,1...1,7) cm3 : 0,20

Spread 100 s: (0,35)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0,30...1,00

Governor spring pre-tension Click setting x : 5,50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Deliquantity : 51,5...52,5 1000 : (50,0...54,0)

Spread

cm3 : 2.5 1000 : (4.0)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.10 Speed rpm : 1540...1550

2nd rack travel in: 4,0

rpm : 1590...1620 Speed 3rd rack travel in: 0.30...1.60

Speed rpm : 1750 LOW IDLE 1 Control lever position degrees: 22...30 Setting point w/out bumper spring rpm : 350° Rack travel in mm: 6,45 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6,90...7,10 Rack travel in mm: 2,00 Speed rpm : 670...730 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 9,10...9,20 2nd speed rpm : 500 Rack travel in m: 10,40...10,50 3rd speed rpm : 900 Rack travel in m: 10,00...10,20 4th speed rpm : 1100 Rack travel in m: 9,50...9,80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 51.0...53.0 1000 s: (49.0...55.0) : 900 Speed rom Del.quantity cm3/: 53,0...55,0 1000 s: (51,0...57,0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,10 Speed rpm : 1540...1550 STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19,00...21,00 LOW IDLE Speed rem : 350

Spread cm3 : 2.0 1000 s: (3.5)

Remarks:

Rack travel in mm : 6,90...7.10 Del.quantity cm3/ : 12,5...15,5 1000 s: (11,0...17,0)

Note remarks

Test sheet : MWM 2,9 b1 Edition : 15.08.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 223

Injection pump

Pump designation : PES3A80D320RS1281

Governor

Governor design. : RSV350...1400A2B2129

Customer-spec. information Customer : MWM

Engine : D229-3

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,20...2,30

: (2,15...2,35)

Rack travel in mm : 9,00...12,00

Firing order : 1-2-3 Phasing : 0-120-240 Tolerance + - 0 : 0,50(0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10,00 & maximum rack tra: 21,00 Difference OCS : 4,0...5,0

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9,90...10,00

Del.quantity cm3/: 5,4...5,5

100 s: (5,3...5,7)

Spread cm3 : 0.25

100 s: (0,40)

rpm : 350 2nd speed

Rack travel in mm : 6,90...7,10

Del.quantity cm3/: 0,6...0,9 100 s: (0,5...1₁)

cm3 : 0,20

Spread 100 s: (0,35)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm: 0,3...1,0

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

. 45,5...55,5 1000 : (53,0...57,0) Del.quantity

: 2,5 cm3 Spread

1000 : (4,0)

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 8,90

Speed rpm : 1440...1450

2nd rack travel in: 4,00

Speed rpm : 1495...1525

3rd rack travel in: 0,30...1,70

Speed rpm : 1700 LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring rpm : 350° Rack travel in mm: 6,50 Testing: Speed rpm : 100 Minimum rack trave: 19,00 rpm : 350 Rack travel in mm : 6,90...7,10 Rack travel in mm : 2,00 Speed rpm : 650...710 Speed rpm : 850 Maximum rack trave: 1,00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9,90...10,00 2nd speed rpm : 1100 Rack travel in m: 10,20...10,50 3rd speed rpm : 700 Rack travel in m: 10,60...10,80 4th speed rpm : 500 Rack travel in m: 10,70...10,80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1100 Del.quantity cm3/: 55.0...57.0 1000 s: (53.0...59.0) : 700 Speed rom Del.quantity cm3/: 51,0...53,0 1000 s: (49,0...55,0) Aneroid pressure h: 500 Del.quantity cm3/: 48.5...50.0 1000 s: (46.5...52.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8,90 Speed rpm : 1440...1450 STARTING FUEL DELIVERY

Speed

LOW IDLE

F26

rpm : 100

Rack travel in mm : 19,00

Speed rpm : 350
Rack travel in mm : 6,90...7,10
Del.quantity cm3/ : 6,5...9,5
1000 s: (5,0...11,0)
Spread cm3 : 2,0
1000 s: (3,5)

Remarks:

Note remarks

Test sheet : MWM 5,9 14 Edition : 16.08.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 224

Injection pump

Pump designation : PES6A90D320RS2605

Governor

Governor design. : RSV350...1050A1B2029

-2R

Customer-spec. information Customer

Engine : TD 229-6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00x2,00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm

: 2,20...2,30 : (2,15...2,35)

Rack travel in mm : 9,00...12,00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240

Tolerance + - 0 : 0,5 (0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8,20 & maximum rack tra: 21,00 Difference CS : 4...5

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 8,20...8,30

Del.quantity cm3/: 5,3...5,4

100 s: (5,1...5,5)

Spread cm3 : 0.3

100 s: (۵٫5)

rpm : 350 2nd speed

Rack travel in mm : 6,40...6,60 Del.quantity cm3/: 0,7...1,1

100 s: (-) Spread cm3 : 0.25

100 s: (0,45)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm: 0,30...1,00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Deliquantity : 53,0...54,0

1000 : (51,5...55,5)

Spread cm3 : 3.0 1000 : (5,0)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testing:

1st rack travel in: 7,20

Speed rpm : 1070...1080

2nd rack travel in: 4,00

Speed rpm : 1090...1120 3rd rack travel in: 0,30...1,00

rpm : 1250 Speed

LOW IDLE 1

Control lever

position degrees: 26...34

Setting point w/out bumper spring

rpm : 350°

Rack travel in mm : 5,90...6,10

Testing:

Speed rpm : 100 Minimum rack trave: 19,00 rpm : 350 Speed

Rack travel in mm : 5,40...6,60 Rack travel in mm : 2,00 Speed rpm : 530...590 Speed rpm : 670

Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 8,20...8,30 2nd speed rpm : 875

Rack travel in m: 8,40...8,70 3rd speed rpm : 700

Rack travel in m: 8,90...9,10

4th speed rpm : 500

Rack travel in m: 9,00...9,10

FUEL DELIVERY CHARACTERISTICS

1st version

1000 s: (49,0...56,0)

rpm : 500° Speed

Del.quantity cm3/: 46,0...50,0 1000 s: (43,5...50,5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7,20

Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed : 100 rpm

Rack travel in mm: 19,00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6,40...6,60 Del.quantity cm3/ : 7,50...11,50 1000 s: (-)

Spread

cm3 : 2,5 1000 s: (4,5)

Remarks:

APPLICATION

Tractor (tractor engines)

Note remarks

: MWM 5,9 j Test sheet Edition : 16.08.88

Replaces

Test oil : ISO-4113

^ombination no. : 9 400 085 270

ction pump

designation : @286A9CP32CRS2718

JUNOR

w.vernor design. : RSV350...1400A2B2215

Customer-spec. information Customer

Engine : D 229/6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 046

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,70...2,80 : (2,65...2,85)

Rack travel in mm : 9,00...12,0

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240 Phasing

Tolerance $+ - ^{\circ}$: 0,5(0,75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9,00...12,00

& maximum rack tra: 21,00 Difference CS: 3...4

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 8,50...8,60

Del.quantity cm3/: 6,1...6,2

100 s: (5,9...6,4)

Spread cm3 : 0.3

100 s: (0,5)

rpm : 350 2nd speed

Rack travel in mm : 5,40...5,60

Del.quantity cm3/: 1,1...1,5

100 s: (0,9...1,7) cm3 : 0,25 Spread

100 s: (0.45)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed грт : 800

Rack travel in mm : 0,30...1,00

Governor spring pre-tension

Click setting x : 5,0

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 61,5...62,5 Del.quantity

1000 : (59,5...64,5) cm3 : 3,0

Spread

1000 : (5.0)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 7.50 Speed rpm : 1440...1450

2nd rack travel in: 4,00

rpm : 1475...1505 Speed 3rd rack travel in: 0,30...1,70

Speed rpm : 1650 LOW IDLE 1 Control lever position degrees: 21...29 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 4,90...5,10 Testing: rpm Speed : 100 Minimum rack trave: 19,00 Speed : 350 rpm Rack travel in mm : 5,40...5,50 Rack travel in mm : 2,00 Speed : 560...620 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 8,50...8,60 ad speed rpm : 500 Rack travel in m: 9,10...9,20 2nd speed rpm 3rd speed rpm : 900 Rack travel in m: 8,80...9,10 FUEL DELIVERY CHARACTERISTICS 1st version : 5000 Speed Lbm Del.quantity cm3/: 56.0...58.0 1000 s: (53.5...60.5) : 900 Speed rpm Del.quantity cm3/: 64,0...66,0 1000 s: (61,5...68,5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7,50 Speed rpm : 1440...1450 STARTING FUEL DELIVERY rpm : 100 Rack travel in mm : 19,00...21,00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5,40...5,60 Del.quantity cm3/: 11,0...15,0 1000 s: (9.0...17.0 cm3 : 2.5 Spread 1000 s: (4,5)

Remarks:

Note remarks

Test sheet : MB 10,0 j Edition : 12.08.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 250

Injection pump

Pump designation : PESP100A720RS265

Governor

Governor design. : RQ250/1100PA397R

Customer-spec, information

Customer : DAIMLER-BENZ

Engine : OM 355-5

1st version kW : 142 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6,00X1,50X600 x Length nm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90

: (2,75...2,95)

Rack travel in mm : 9,00...12,00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288 Tolerance + - 0 : 0,5(0,75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12,8...12,9

Del.quantity cm3/ : 11,4...11,6

Spread cm3 : 0.35

100 s: (0,60)

rpm : 250 2nd speed

Rack travel in mm : 7,3...7,5 Del.quantity cm3/: 0,9...1,4

cm3 : 0,3 Spread

100 s: (0,5)

GUIDE SLEEVE POSITION

Speed rpm: 600

Rack travel in mm : 15,6...16,4

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 114,0...116,0

1000 : (112,0...118,0)

cm3 : 3,6 Spread

1000 : (6,0)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16,0

Testing:

1st rack travel in: 11,80

Speed rpm : 1115...1130

2nd rack travel in: 4,0

rpm : 1190...1220 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250°

Rack travel in mm: 6,5

Testing:

Speed rpm : 100 Minimum rack trave: 7,60 Speed rpm : 250

Rack travel in mm : 6,40...6,60

Rack travel in mm : 2,00

Speed Speed rpm : 400...460 rpm : 500

Maximum rack trave: 1,00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 450
Del.quantity cm3/: 92,0...96,0
1000 s: (90,0...98,0)

RACK STOP ADJUSTMENT

Speed rpm: 500

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11,80

Speed rpm : 1115...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140,0...160,0

Remarks:

Note remarks

Test sheet : SCA 11,0 t3 Edition : 16.08.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 270

Injection pump

Pump designation : PE6P110A720RS3066V

Governor

Governor design. : RSV350...1100P1/462

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6,00X1,50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3,30...3,40 : (3,25...3,45) Prestroke mm

Rack travel in mm : 9,00...12,00

firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-Tolerance + - 0 : 0,5(0,75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14,00...14,10

Del.quantity cm3/: 17,4...17,6

100 s: (-)

Spread cm3 : 0.4

100 s: (0,8)

rpm : 350 2nd speed

Rack travel in mm : 6,40...6,60 Del.quantity cm3/: 1,0...1,4

cm3 : 0.2Spread

100 s: (0,4)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0,30...1,00

Governor spring pre-tension

Click setting x : 3,0

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity ...176,0

1000 : (171,0...179,0)

RATED SPEED

1st version Control lever

position degrees: 53...61

Testing:

1st rack travel in: 13,10

rpm : 1140...1150 Speed

2nd rack travel in: 3,70

Speed rpm : 1180...1220

5th rack travel in: 1350

Speed rpm : 0,30...1,70

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 350

Rack travel in mm : 5,90...6,10

Testing:

Speed rpm : 100 Minimum rack trave: 20,00

Speed rpm: 350
Rack travel in mm: 6,40...6,60

Rack travel in mm: 2,00
Speed rpm: 440...500
Speed rpm: 600
Maximum rack trave: 1,00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13,10

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

LOW IDLE

rpm : 350 Speed

Rack travel in mm: 0,80...1,20

Spread

cm3 : 2.0 1000 s: (-)

Remarks:

Note remarks

: MB 10.0 k : 15.08.88 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 087 291

Injection pump

Pump designation : PESP100A720RS463

Governor

Governor design. : RQV300...1100PA465

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 355-5 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,80...2,90

: (2,75...2,95) Rack travel in mm : 9,00...12,00

Firing order : 1-2-4-5-3

: 0-72-144-216-288 Phasing

G07

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13,70...13,80

Del.quantity cm3/: 12,50...12,70

Spread cm3 : 0,35

100 s: (0,60)

2nd speed rpm : 300
Rack travel in mm : 7,40...7,60
Del.quantity cm3/: 0,90...1,30
Spread cm3 : 0,35

100 s: (0,55)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100 : 8,40 travel mm rpm : 800 2nd speed

travel mm : 5,00...5,50

rpm : 400 3rd speed

travel mm : 2,00...2,60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1.0

Speed rpm : 1100

Rack travel in mm : 15,2...17,8

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity

: 125_0...129_0 1000 : (123_0...131_0)

RATED SPEED

1st version

Control lever

position degrees: 65...73

Testing:

1st rack travel in: 12,80

rpm : 1140...1150 Speed

2nd rack travel in: 4,00 Speed rpm : 1230...1260 3rd rack travel in: 0,00...1,00

rpm : 1350 Speed

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

rpm : 100 Speed

Minimum rack trave: 9.00
Speed rpm: 300
Rack travel in mm: 7.40...7.60
Rack travel in mm: 2.00
Speed rpm: 550...610

CONSTANT REGULATION

Speed rpm : 300...430

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 450 Speed

Del.quantity cm3/: 104,5...107,5 1000 s: (102,0...110,0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12,70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Note remarks : DEE 7,6 ; 4 : 14.01.88 Test sheet Edition Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - 0 : 0.50 (0.75) Combination no. : 9 400 230 047 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES6A95D41ORS2561 EP type number : 9 410 230 006 rpm : 1100 1st speed Governor Governor design. : RSV600...1100A2C2049 Rack travel in mm : 10.60...10.70 -1L : 9 420 234 158 Governer no. Del.quantity cm3/: 10.7...10.9 Customer-spec. information 100 s: (10.5...11.1) Customer : JOHN DEERE Spread cm3 : 0.3 : 6466TH-02 Engine 100 s: (0.6) : 125.0 1st version kW : 2200 Rated speed 2nd speed rpm : 600.0 Rack travel in mm: 4.9...5.1 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8) Test oil cm3 : 0.3Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 413 385 007 Control-lever position Degree: -3 Inlet press., bar: 1.50 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Test nozzle holder : 0 681 343 009 assembly Governor spring pre-tension Click setting x :? Opening. pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 9 681 271 001 Speed rpm : 1100 : 107.0...109.0 Del.quantity 1000 : (105.0...111.0) cm3 : 3.50 1000 : (6.00) Outside diameter x Wall thickness Spread : 6.00x2.00x600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 43...51 BEGINNING OF DELIVERY Test pressure, bar: 27...29 Testing: 1st rack travel in: 9.60

rpm : 1145...1155

Speed

2nd rack travel in: 4.00

Prestroke mm

: 1.85...1.95

: (1.80...2.00)

Speed rpm : 1200...1230 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 24...32 Setting point W/out bumper spring

Speed ` rpm : 600 Rack travel in mm: 4.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 600 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed Lbw : 705...765

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.60...10.70 2nd speed rpm : 950

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950

Del.quantity cm3/: 120.0...124.0

1000 s: (118.5...125.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 155.0...175.0 1000 s: (150.0...180.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

rpm : 1200 Speed

Rack travel in mm : 4.70...4.90

LOW IDLE

Speed rpm : 600

GIÛ

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 12.0...16.0

1000 s: (9.5...18.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

: JOHN DEERE # RE28881

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark = 15.5° after start of delivery cyl. 1. rque-control pring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CAS 8,3 9 6 Edition : 14.01.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 055 Injection pump Pump designation : PES6A95D320LS2647 EP type number : 9 410 230 020 Governor Governor design. : RSV375...1050A2C2034 -3R Governer no. : 9 420 234 152 Customer-spec. information Customer : J.I. CASE : A504 BDT Engine 1st version kW : 163.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 0 681 273 009 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 9 681 271 020 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY : (2.50...2.70)

Test pressure, bar: 27...29 Prestroke mm : 2.55...2.65 Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050 Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 14.9...15.1

100 s: (14.7...15.3)

Spread cm3 : 0.3

100 s: (0.6)

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 149.0...151.0 Del.quantity 1000 : (147.0...153.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.90

Speed rpm: 1090...1100 2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 20...28 Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 375

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 535...595

SET IDLE AUXILIARY SPRING Speed rpm : 1200 Rack travel in mm: 2.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.40...13.50

2nd speed rpm : 750

Rack travel in m: 14.10...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/: 152.5...161.5

1000 s: (151.5...163.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

LOW IDLE

rpm : 375

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 16.5...22.5

1000 s: (14.0...25.0)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Starting/full-load transition speed from holding magnet = 450 1/min. ntrol pring retainer. Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CAS 8,3 9 4 Test sheet Edition : 8.8.88

Replaces : 7.86 Test oil : ISO-4113

Combination no. : 9 400 230 056

Injection pump

Pump designation : PES6A95D32OLS2647 EP type number : 9 410 230 020

Governor

Governor design. : RSV375...1050A2B2034

Customer-spec. information Customer : J.I. CASE

Engine : A 504 BDT

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 9 681 271 020

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 10.50...10.50 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

1000 : (125.5...129.5 cm3 : 3.50 Del.quantity

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.80

rpm : 1080...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1165...1185

4th rack travel in: 1250

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 375 Rack travel in mm: 4.90...5.10

Rack travel in mm : 2.00

rpm : 510...570 Speed

SET IDLE AUXILIARY SPRING Speed rpm : 1200 Rack travel in mm: 2.55

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.80...11.90

2nd speed rpm : 750

Rack travel in m: 11.95...12.25

3rd speed rpm : 600

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 128.0...134.0 1000 s: (126.0...136.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1080...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...160.0 1000 s: (110.0...170.0) Rack travel in mm: 21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 14.0...20.0

1000 s: (11.5...22.5)

Spread

cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Starting/full-load transition speed from holding magnet = 500 1/min. ntrol

pring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 9 7 Edition : 14.01.88

Replaces Test oil

: ISO-4113

Combination no. : 9 400 230 056

Injection pump

Pump designation : PES6A95D320LS2647 EP type number : 9 410 230 020

Governor

Governor design. : RSV375...1050A2C2034

-4R

: 9 420 234 153 Governer no.

Customer-spec. information Customer : J.I. CASE

Engine : A504BDT

1st version kW : 148.5 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 9 681 271 020

Outside diameter x Wall thickness

: 6.35x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 127.5...129.5 Del.quantity 1000 : (125.5...131.5)

cm3 : 3.50Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing: 1st rack travel in: 10.80

Speed rpm : 1080...1100

2nd rack travel in: 4.00

Speed rpm : 1165...1185 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 375

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

Speed rpm : 510...570

SET IDLE AUXILIARY SPRING Speed rpm : 1200 Rack travel in mm : 2.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.80...11.90

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

3rd speed rpm : 600

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm: 750

Del.quantity cm3/: 129.0...133.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 1080...1100

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 120.0...160.0

1000 s: (110.0...170.0)

Rack travel in mm: 21.00

LOW IDLE

Speed rpm : 375

G16

Rack travel in mm : 4.90...5.10 Del.quantity cm3/ : 14.0...20.0

1000 s: (11.5...22.5) cm3 : 3.50

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Starting/full-load transition speed from holding magnet = 500 1/min. ntrol pring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 h 2 Edition : 15.06.88 Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 066 Injection pump Pump designation : PES6A1000410RS2676 EP type number : 9 410 230 023 Governor Governor design. : RSV425...1100A2C2161 -1L : 9 420 234 133 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6466T 1st version kW : 120.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar : 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 9.40...9.50 Del.quantity cm3/: 9.9...10.1 100 s: (9.7...10.3) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 425.0 Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.7) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 Aneroid pressure h: 500 Del.quantity : 99.0...101.0 1000 : (97.0...103.0) cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 46...54 Testing: 1st rack travel in: 8.40 rpm : 1145...1155 Speed

Rack travel in mm: 10.50

per values

Test pressure, bar: 27...29

: 2.45...2.55

: (2.40...2.60)

BEGINNING OF DELIVERY

Prestroke mm

2nd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 24...32

Setting point w/out bumper spring

: 425 rpm Rack travel in mm: 4.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 425

Rack travel in mm: 5.30...5.50 Rack travel in mm: 2.00 Speed rom : 600...660

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.40...9.40

2nd speed rpm : 750

Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 173

Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 80

Rack travel in m: 9.40...9.80 3rd pressure hPa : 500

Rack travel in m: 10.60...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500 : 750 Speed rpm

Del.quantity cm3/: 116.0...119.0

1000 s: (113.5...121.5)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/:-

1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

HIGH IDLE

1st version

Speed rpm : 1195

Rack travel in mm : 4.70...4.90

LOW IDLE

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark = 15.5° after start of delivery cyl. 1. rque-control pring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DEE 7,6 h : 15.06.88 Test sheet Edition Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 067 Injection pump Pump designation : PES6A1000410RS2676 EP type number : 9 410 230 023 Governor Governor design. : RSV425...1100A2C2161 -2L Governer no. : 9 420 234 100 Customer-spec. information Customer : JOHN DEERE Engine : 6466A 1st version kW : 141.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test of inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar : 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.45...2.55 : (2.40...2.60) G19

Rack travel in mm : 10.50...10.50 Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1100 Rack travel in mm : 10.20...10.30 Del.quantity cm3/: 11.1...11.3 100 s: (10.9...11.5) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 425.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 2.4...2.8 100 s: (2.1...3.0) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 RATED SPEED 1st version Control lever position degrees: 43...51

Testing:

Speed

1st rack travel in: 9.20

rpm : 1145...1155

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

: 425 rpm

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.20...10.30

2nd speed rpm : 750

Rack travel in m: 11.40...11.60

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm

hPa :-Pressure

Rack travel mm : 9.35...9.55

Measurement

Speed 1/min : 500

1st pressure hPa : 200 Rack travel in m: 11.00...11.10 2nd pressure hPa : 80

Rack travel in m: 9.70...10.10

3rd pressure hPa : 500

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500 Speed rpm : 750 Del.quantity cm3/ : 127.5...130.5

1000 s: (125.0...133.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/:-

1000 s: (85.0...93.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0) Rack travel in mm: 19.40

HIGH IDLE

1st version

Speed rpm : 1190

Rack travel in mm : 5.70...5.90

LOW IDLE

Speed rpm : 425

Rack travel in mm: 5.80...6.00 Del.quantity cm3/: 24.0...28.0 1000 s: (21.5...30.5) Spread cm3: 3.50

1000 s: (5.50)

:

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark = 15.5° after start of delivery cyl. 1. rque-control

pring retainer.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 h12 Edition : 14.01.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 069 Injection pump Pump designation : PES6A100D410RS2676-1 EP type number : 9 410 230 024 Governor Governor design. : RSV450...1000A1C2186 -1L : 9 420 234 149 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6466A 1st version kW : 140.0 Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 27...29

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000 Rack travel in mm : 11.60...11.60 Del.quantity cm3/: 12.1...12.3 100 s: (11.9...12.5) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 450.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.4) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1600 Speed : 121.5...123.5 Del.quantity 1000 : (119.5...125.0) cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 47...55 Testing: 1st rack travel in: 10.60 rpm : 1045...1055 Speed 2nd rack travel in: 4.00

Rack travel in mm : 10.50...10.50

Prestroke mm : 2.45...2.55

: (2.40...2.60)

Speed rpm : 1070...1100 4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 450 Rack travel in mm: 5.4

Testing:

Speed rom : 100 Minimum rack trave: 19.00 rpm : 450

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 550...610 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.60...11.60

2nd speed rpm : 700

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 132.0...135.0

1000 s: (129.5...137.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1045...1055

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 190.0...210.0 1000 s: (185.0...215.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed : 1075 rpm

Rack travel in mm : 5.90...6.10

LOW IDLE

Speed rpm : 450

G22

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 18.0...22.0 1000 s: (15.5...24.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm. Starting/full-load transition speed from holding magnet = 500 1/min.

APPLICATION Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,6 h13 Edition : 14.01.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 070 Injection pump Pump designation : PES6A1000410RS2676-1 EP type number : 9 410 230 024 Governor Governor design. : RSV400...950A1C2186-: 9 420 234 150 Governer no. Customer-spec. information Customer : JOHN DEERE Engine : 6466T 1st version kW : 102.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly pressure, bar : 172...175 : 9 681 271 001 : 6.90x2.00x600

Opening Test lines Outside diameter x Wall thickness x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.45...2.55 Prestroke mm : (2.40...2.60) Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm: 10.50...10.60

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

: 97.0...99.0 Del.quantity 1000 : (95.0...101.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.50

Speed rpm : 995...1005

2nd rack travel in: 4.00

Speed rpm : 1045...1055 3rd rack travel in: 4.00

Speed rpm : 1050...1080

4th rack travel in: 1150

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 22...30 Setting point w/out bumper spring

Speed rpm : 400' Rack travel in mm: 6.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 6.50...6.70

Rack travel in mm : 2.00

Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 10.50...10.60

2nd speed rpm : 650

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 115.0...118.0

1000 s: (112.5...120.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 995...1005 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 19.8...21.2

1000 s: (19.5...21.5) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed грт : 400

Rack travel in mm: 6.50...6.70 Del.quantity cm3/: 18.0...22.0

1000 s: (15.5...24.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Screw in torque-control-spring retainer to make contact at 650 l/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 a 4 : 9.9.88 Test sheet Edition Replaces : 12.3.87

Test oil : ISO-4113

Combination no. : 9 400 230 073

Injection pump

Pump designation : PES6A100D320/3RS2691

Governor

Governor design. : RSV425...1100A2C2190

Customer-spec. information Customer : CDC

Engine : 6 CT-830

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 016

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50(0.75) Phasing

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.35

100 s: (0.6)

2nd speed rpm : 425

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.35Spread

100 s: (0.55)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

: 3.5 cm3 Spread

1000 : (6.0)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00 Speed rpm : 1180...1210

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 17...25 Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 5.30

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm: 425
Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00

Speed rpm : 470...530

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0 1000 s: (130.0)

LOW IDLE

Speed rpm : 425
Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.5 Spread

1000 s: (5.5)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CAS 8,3 d 2 : 14.01.88 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 230 080 Injection pump Pump designation : PES6A95D42OLS2551 EP type number : 9 410 230 001 Governor Governor design. : RSV375...1100A0C2166 -1R : 9 420 234 175 Governer no. Customer-spec. information Customer : J.I.CASE Engine : A-5048D 1st version kW : 92.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 9 681 273 009 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 9 681 271 020 Outside diameter x Wall thickness x Length mm : 6.35x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.20...2.30 Prestroke mm : (2.15...2.35) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.50...10.50

Del.quantity cm3/ : 7.6...7.8

100 s: (7.4...8.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del. quantity : 76.0...78.0 1000 : (74.0...80.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.50

Speed rpm : 1160...1170

2nd rack travel in: 4.00

rpm : 1230...1250 Speed 4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 26...34 Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 7.8 : 375 Speed **Cbw**

Rack travel in mm : 7.70...7.90

Rack travel in mm : 2.00

Speed rpm : 670...730

SET IDLE AUXILIARY SPRING Speed rpm : 1280 Rack travel in mm : 2.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.50...10.50

2nd speed rpm : 700

Rack travel in m: 11.80...12.00

3rd speed rpm : 600

Rack travel in m: 12.15...12.25

FUEL DELIVERY CHARACTERISTICS

1st version

Speed : 700 Com

Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0)

Spread cm3 : 5.00

1000 s: (7.00)

Speed : 600 rpm

Del.quantity cm3/: 94.0...94.0 1000 s: (96.0...96.0) cm3 : 5.00

Spread

1000 s: (7.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...145.0

1000 s: (132.0...148.0)

Rack travel in mm: 17.80

LOW IDLE

Speed rpm : 375

Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

spring retainer.

: CASE # A-166 258

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a11 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 089 Injection pump Pump designation : PES6A1000320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1100A0C2190 -3R Governer no. : 9 420 234 125 Customer-spec. information Customer : C.D.C. : 6 C 8.3 Engine 1st version kW : 112.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle hoider : 1 688 901 017 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 10.50 : 1-5- 3- 6- 2- 4 firing order Phasing : 9-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1100 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 9.5...9.7 100 s: (9.3...9.9) Spread cm3 : 0.3100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1100 : 95.5...97.5 Del.quantity 1000 : (93.5...99.5) cm3 : 3.50Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 41...49 Testing:

H01

1st rack travel in: 9.60 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rpm : 445...505 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.80...2.90 Prestroke mm Note remarks : (2.75...2.95) Rack travel in mm : 10.50...10.50 Test sheet : CUM 8,3 d Firing order : 1-5-3-6-2-4 Edition : 15.06.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 096 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PES6A1000320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 025 Governor BASIC SETTING Governor design. : RSV425...900A4C2213-1R 1st speed rpm: 830 Governer no. : 9 420 234 136 Rack travel in mm: 13.40...13.50 Customer-spec. information : C.D.C. Customer Del.quantity cm3/: 13.5...13.7 Engine : 6 CT 8.3 100 s: (13.3...13.9) 1st version kW : 154.0 Spread cm3 : 0.3Rated speed : 1800 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 425.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.2...1.6 Test oil inlet temp. °C : 38...42 100 s: (0.9...1.8) Overflow valve cm3 : 0.3Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 017 assembly rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening : 207...210 pressure, bar Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 rpm : 830 Speed : 135.0...137.0 Del.quantity 1000 : (133.0...139.0) cm3 : 3.50 1000 : (6.00) Outside diameter x Wall thickness Spread x Length mm : 6.00x2.00x600 (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 44...48 BEGINNING OF DELIVERY

Testing:

HO3

Test pressure, bar: 27...29

1st rack travel in: 12.40 Speed rpm : 925...935 2nd rack travel in: 4.00 Speed rpm : 960...990 4th rack travel in: 1030 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 20...28 Setting point w/out bumper spring Speed rpm : 425 Rack travel in mm: 5.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 425 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 435...495 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 Speed rpm : 925...935 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 425 Rack travel in mm : 5.50...5.70

Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 APPLICATION Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Note remarks Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Test sheet : CUM 8,3 d 1 Edition : 15.06.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 096DA Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PES6A1000320/3RS2691 EP type number : 9 410 230 025 BASIC SETTING Governor Governor design. : RSV425...900A4C2213rpm : 750 1st speed 1R Governer no. : 9 420 234 136 Rack travel in mm : 14.00...14.10 Cust. part no. : 3908845 Del.quantity cm3/: 14.2...14.4 Customer-spec. information 100 s: (14.0...14.6) Customer : C.D.C. Spread cm3 : 0.3Engine : 6CT-I 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 425.0
Rack travel in mm : 6.0...6.2
Del.quantity cm3/: 1.8...2.2
190 s: (1.5...2.4)
Spread cm3 : 0.3 Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 100 s: (0.5) Inlet press., bar : 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 017 Speed rpm : 800 Rack travel in mm: 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 750 Del.quantity : 142.5...144.5 Outside diameter 1000 : (140.5...146.5) cm3 : 3.50 1000 : (6.00) x Wall thickness Spread x Length mm : 6.00x2.00x600 (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ____

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 13.00

H05

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

rpm : 795...805 Speed 2nd rack travel in: 4.00 Speed rpm : 825...855 3rd rack travel in: 4.00 Speed rpm : 830...860

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm: 5.6

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 425

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00 Speed rpm : 440...500

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 795...805

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 18.0...22.0

Spread

1000 s: (15.5...24.5) cm3 : 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1 Adjust stop lever to 0.5...1.0 mm before stop. APPLICATION Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 Note remarks : (2.75...2.95) Rack travel in mm : 10.50...10.50 Test sheet : CUM 8,3 a12 firing order : 1-5-3-6-2-4 Edition : 15.06.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 097 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PES6A1000320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 025 Governor BASIC SETTING Governor design. : RSV400...1100A0C2190 -8R 1st speed rpm : 1100 Governer mo. : 9 420 234 137 Rack travel in mm : 12.30...12.40 Customer-spec. information Customer Del.quantity cm3/: 12.2...12.4 Engine : 6 CT 8.3 100 s: (12.0...12,6) 1st version kW : 156.6 Spread cm3 : 0.3Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.8 2nd speed Test oil Rack travel in mm: 5.6...5.8 inlet temp. OC : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve cm3 : 0.3Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 017 assembly Speed rpm : 800 Rack travel in mm : 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1100 Del.quantity : 122.5...124.5 Outside diameter 1000 : (120.5...126.5) x Wall thickness cm3 : 3.50Spread x Length mm : 6.00X2.00X600 1000 : (6.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values Control lever position degrees: 40...48 BEGINNING OF DELIVERY

Testing:

H07

Test pressure, bar: 27...29

1st rack travel in: 11.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1185...1215 3rd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: ? Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 5.60...5.80 Rack travel in mm : 2.00 rpm : 445...505 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.30 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed грт_ : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 Note remarks : (2.75...2.95) Rack travel in mm : 10.50...10.50 Firing order : 1- 5- 3- 6- 2- 4 Test sheet : CUM 8,3 a13 Edition : 15.06.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 099 Tolerance + - 0 : 0.50 (0.75) Injection pump Pump designation : PES6A1000320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 025 Governor BASIC SETTING Governor design. : RSV400...1050A0C2190 -10R 1st speed rpm : 1050 : 9 420 234 142 Governer no. Rack travel in mm : 9.60...9.70 Customer-spec. information Customer : C.D.C. Del.quantity cm3/: 8,2...8.4 Engine : 6 C 8.3 100 s: (8.0...8.6) 1st version kW : 89.0 Spread cm3 : 0.3Rated speed : 2100 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Test oil Rack travel in mm : 5.6...5.8 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve Spread cm3 : 0.3: 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 : 1 688 901 017 assembly rpm : 800 Speed Rack travel in mm : 0.30...0.70 Opening. : 207...210 pressure, bar Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 rpm : 1050 Speed : 82.0...84.0 Del.quantity Outside diameter 1000 : (80.0...86.0) x Wall thickness cm3 : 3.50Spread : 6.00x2.00x600 x Length mm 1000 : (6,00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values ____ Control lever position degrees: 41...49 BEGINNING OF DELIVERY

Testing:

H09

Test pressure, bar: 27...29

1st rack travel in: 8.60

Speed rpm : 1095...1105 2nd rack travel in: 4.00

Speed rpm : 1125...1155 4th rack travel in: 1200

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.2

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 400 Rack travel in mm : 5.60...5.80

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 9.60...9.70 2nd speed rpm : 750

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 86.5...90.5

1000 s: (84.5...92.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.60

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

H10

Spread cm3 : 3.501000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 control pring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 e Test sheet Edition : 15.06.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 102

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050A0C2216

: 9 420 234 146 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3 Engine

1st version kW : 141.7 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2,80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Del.quantity : 100.5...104.5)

cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

H11

1st rack travel in: 10.10 Speed rpm : 1090...1100 2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 25...34 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.10...11.20

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

1000 s: (124.0...132.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm: 5.90...6.10 Del.quantity cm3/: 18.0...22.0

1000 s: (15.5...24.5)

H12

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 110 cam angle after start of delivery cyl. 1 control pring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.75...2.85 : (2.70...2.90) Note remarks Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 : IHC 5.9 a : 14.01.88 Test sheet Edition Replaces : 6.11.87 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 104 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D32ORS2724 EP type number : 9 410 230 029 BASIC SETTING Governor Governor design. : RQV350...1350AB1224R 1st speed rpm: 1350 Governer no. : 9 420 231 016 Rack travel in mm : 11.10...11.20 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/ : 7.5...7.7 Engine : MARS DT 360 100 s: (7.3...7.9) 1st version kW : 123.0 Spread cm3 : 0.3Rated speed : 2700 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Test oil Rack travel in mm : 5.3...5.5 inlet temp. OC : 38...42 Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1) Overflow valve Spread cm3 : 0.3: 2 417 413 038 100 s: (0.5) Inlet press., bar : 2.80 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 025 GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 Opening travel mm : 8.50...8.50 pressure, bar : 172...175 2nd speed rpm : 1500 travel mm : 9.30...9.50 Orifice plate 3rd speed rpm : 350 diameter mm : 0,5 travel mm : 1.00...1.00 4th speed rpm : 450 travel mm : 1.90...2.40 Test lines : 9 681 271 001 5th speed rpm : 250 travel mm : 0.10...0.50 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1550 Insp. values in parentheses Rack travel in mm : 6.70...9.30 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 27...29 Speed rpm : 1350 Aneroid pressure h: 900

75.5...77.5 1000 : (73.5...79.5) cm3 : 3.50 1000 : (6.00) Del.quantity

Spread

RATED SPEED

1st version Control lever

position degrees: 49...55

Testing:

1st rack travel in: 10.50

Speed rpm : 1390...1420

2nd rack travel in: 4.00

rpm : 1505...1515 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...15 rpm : 350

Rack travel in mm : 5.30...5.50

Speed rpm : 250 Maximum rack trave: 7.80

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : -

Rack travel mm : 9.10...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 466

Rack travel in m: 10.40...10.80

2nd pressure hPa : 227

Rack travel in m: 9.60...9.70

3rd pressure hPa : 900

Rack travel in m: 11.00...11.30

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

H14

Del.quantity cm3/:-

1000 s: (66.0...74.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...150.0

1000 s: (145.0...145.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 15.0...19.0

1000 s: (12.5...21.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR

: # 1 810 220 C92

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 5,9 a 1 Edition : 14.01.88 Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 105 Injection pump Pump designation : PES6A95D32ORS2724 EP type number : 9 410 230 029 Governor Governor design. : RQV350...1350AB1221R Governer no. : 9 420 231 017 Customer-spec. information Customer : NAVISTAR Engine : MARS DTA360 1st version kW : 134.0 Rated speed : 2700 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar : 2.80 Test nozzle holder assembly : 1 688 901 025 Opening pressure, bar : 172...175 Orifice plate diameter mm : 0,5

Test lines : 9 681 271 001

Outside diameter x Wall thickness x Length mm : 6.35x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

cm3 : 0.3Spread

100 s: (0.6)

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.50...8.50 2nd speed rpm : 1500

travel mm : 9.30...9.50

3rd speed rpm : 350

travel mm : 1.00...1.00

4th speed rpm : 450 travel mm : 1.90...2.40

5th speed rpm : 250

travel mm : 0.10...0.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1550

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1350 Aneroid pressure h: 900

Del.quantity : 80.0...84.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.50

rpm : 1395...1425 Speed

2nd rack travel in: 4.00

rpm : 1525...1535 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 9...15 Speed rpm : 350 Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00

rpm : 420...480 Speed

Speed rpm : 250 Maximum rack trave: 7.80

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : -

: 9.90...10.10 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : 339

Rack travel in m: 10.90...11.30

2nd pressure hPa : 157

Rack travel in m: 10.30...10.40

3rd pressure hPa : 900

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: rpm : 500 Speed

Del.quantity cm3/:-

1000 s: (74.0...82.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1395...1425

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...150.0 1000 s: (145.0...145.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 15.0...19.0

1000 s: (12.5...21.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

: NAVISTAR

: # 1 810 221 C92

Adjust stop lever to 0.5...1.0 mm

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 e 1 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 106 Injection pump Pump designation : PES6A1000320/3RS2691 EP type number : 9 410 230 025 Governor Governor design. : RSV400...1050A0C2216 -1R Governer no. : 9 420 234 154 Customer-spec. information Customer : C.D.C. : 6 CT 8.3 Engine 1st version kW : 141.7 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

: 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50...10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1050 Rack travel in mm : 11.90...12.00 Dei.quantity cm3/: 11.5...11.7 100 s: (11.3...11.9) Spread cm3 : 0.3100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 300 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x :? FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Del.quantity : 115.0...117.0 1000 : (113.0...119.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 42...50 Testing:

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 10.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1200

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 23...31

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00 Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 11.90...12.00

2nd speed rpm : 750

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/: 134.0...138.0 1000 s: (132.0...140.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...155.0

1000 s: (132.0...158.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 5.80...6.00 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

H18

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 control pring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 b 3 Edition : 14.01.88 Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 107 Injection pump Pump designation : PES6A1000320/3RS2691 EP type number : 9 410 230 028 Governor Governor design. : RQV350...1200AB1233R Governer no. : 9 420 231 018 Customer-spec. information Customer : C.D.C Engine : 6CT830 1st version kW : 157.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly Opening pressure, bar : 172...175 Orifice plate diameter mm : 0,6 Test lines : 9 681 271 029 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values ____ BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1200 Rack travel in mm : 10.80...10.90 Del.quantity cm3/ : 11.3...11.5 100 s: (11.1...11.7) Spread cm3 : 0.3100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 0.00...0.20 travel mm rpm : 350 2nd speed : 1.00...1.50 travel mm 3rd speed rpm : 450 travel mm : 1.90...2.40 rpm : 1200 4th speed : 6.90...6.90 travel mm rpm : 1350 5th speed travel mm : 8.15...8.65 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1435 Rack travel in mm : 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200

Speed

Aneroid pressure h: 500

Aneroid process

Del.quantity : 115.U...13.0

1000 : (111.0...117.0)

Soread cm3 : 3.50

(6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.80

грт : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1315...1345

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 9...15 Speed rpm : 350

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

rpm : 480...540

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed hPa : 240 Pressure

Rack travel mm : 9.70...9.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 333

Rack travel in m: 10.20...10.60 3rd pressure hPa : 500 Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm_ : 500

Del.quantity cm3/:-

1000 s: (82.5...90.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in nm : 4.60...4.80 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 a 6 Edition : 15.06.88 Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 109 Injection pump Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 030 Governor Governor design. : RSV400...1100A0C2190 -21R Governer no. : 9 420 234 164 Customer-spec. information Customer : C.D.C. Engine : 6CT830 1st version kW : 117.1 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 017 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm: 10.60...10.70

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 93.5...95.5 1000 : (91.5...95.5)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...54

Testing:

1st rack travel in: 9.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.60...10.70

2nd speed rpm : 750

Rack travel in m: 11.10...11.30

rpm : 440...500

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Del.quantity cm3/ : 99.0...103.0 1000 s: (97.0...105.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60 Speed rpm : 1140...1150

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 control pring retainer.

Note remarks

: CUM 8,3 a 7 Test sheet Edition : 15.06.88 Replaces : 6.11.87 Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump

Pumo designation : PES6A1000320/3RS2691

EP type number : 9 410 230 030

Governor

Governor design. : RSV400...1100A0C2190

-22R

Governer no. : 9 420 234 173

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50...10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.1...12.3

100 s: (11.9...12.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 121.5...123.5

1000 : (119.5...125.5)

cm3 : 3.50Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1195...1225

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

грт : 400 Rack travel in mm: 5.4

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm: 400

Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.40...12.50

2nd speed rpm : 750

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750 Del.quantity cm3/ : 136.0...140.0

1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1140...1150

STARTING FUEL DELIVERY

Speed : 100 Lbw

Del.quantity cm3/: 140.0...150.0

1000 s: (135.0...155.0)

Rack travel in mm: 21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 control pring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 27...29 Note remarks : 2.80...2.90 Prestroke mm : (2.75...2.95) Test sheet : CUM 8,3 a 8 Rack travel in mm: 10.50 Edition : 15.06.88 Firing order : 1-5-3-6-2-4 Replaces : 6.11.87 Test oil : ISO-4113 Combination no. : 9 400 230 111 : 0-60-120-180-240-300 Phasing Phasing Injection pump Tolerance + - 0 : 0.50 (0.75) Pump designation : PES6A1000320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 030 Governor BASIC SETTING Governor design. : RSV400...1100A0C2190 -23R 1st speed rpm : 1100 Governer no. : 9 420 234 174 Rack travel in mm : 11.90...12.00 Customer-spec. information Customer : C.D.C. Del.quantity cm3/: 11.3...11.5 Engine : 6CT830 100 s: (11.1...11.7) 1st version kW : 134.2 Spread cm3 : 0.3Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Test oi! Rack travel in mm: 5.8...6.0 inlet temp. °C : 38...42 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Overflow valve cm3 : 0.3Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar : 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 rpm : 800 assembly : 1 688 901 017 Speed Rack travel in mm : 0.30...0.70 Opening pressure, bar : 207...210 Governor spring pre-tension Click setting x :? Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 014 Speed rpm : 1100 Del.quantity : 113.5...115.5 Outside diameter 1000 : (111.5...117.5) x Wall thickness Spread cm3 : 3.50: 6.00X2.00X600 x Length mm 1000 : (6.00) (A) Injection pump setting values RATED SPEED Insp. values in parentheses

1st version

Control lever

position degrees: 47...55

Set equal delivery quant,

per values ____

BEGINNING OF DELIVERY

H25

Testing:

1st rack travel in: 10.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 27...35

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 5.4

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00

Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.90...12.00

2nd speed rpm : 750

Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 120.0...124.0

1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...150.0

1000 s: (135.0...155.0)

Rack travel in mm : 21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 control pring retainer.

Adjust stop lever to 0.5...1.0 mm before stop.

Note remarks

Test sheet : IHC 5,9 a 2 : 14.01.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 113

Injection pump

Pump designation : PES6A95D32ORS2724 EP type number : 9 410 230 029

Governor

Governor design. : RQV350...1350AB1224-

1R

: 9 420 231 019 Governer no.

Customer-spec. information : NAVISTAR Customer

Engine : DTA 360

1st version kW : 130.0 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 025

Opening

pressure, bar : 172...175

Orifice plate

diameter mm : 0,5

Test lines : 9 681 271 001

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1) cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.10...0.50 travel mm

2nd speed rpm : 350

travel mm : 1.00...1.00

3rd speed rpm : 450

travel mm : 1.90...2.40 4th speed rpm : 1400

travel mm

: 8.50...8.50 rpm : 1500 5th speed

travel mm : 9.30...9.50

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1550 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

H27

Aneroid pressure h: 900

Del.quantity : 80.0...84.0)

: 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 46...52

Testing:

1st rack travel in: 10.50

rpm : 1405...1435 Speed

2nd rack travel in: 4.00

rpm : 1535...1545 Speed

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...15

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Speed rpm : 250 Maximum rack trave: 7.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed T rpm : 500 hPa : -Pressure

Rack travel mm : 8.90...9.10

Measurement

1/min : 500 Speed

1st pressure hPa : 426

Rack travel in m: 10.70...11.10 2nd pressure hPa : 207

Rack travel in m: 9.60...9.70

3rd pressure hPa : 900

Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm: 850

Del.quantity cm3/:-

1000 s: (79.5...87.5)

H28

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : -

1000 s: (64.0...72.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1405...1435

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...150.0

1000 s: (125.0...155.0)

Rack travel in mm : 14.60...14.80

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR

: # 1 811 533 C91

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : DEE 7,6 z Edition : 14.01.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 114

Injection pump

Pump designation : PES6A1000410RS2741

EP type number : 9 410 230 031

Governor

Governor design. : RSV400...1100A2C2204

-2L

: 9 420 234 177 Governer no.

Customer-spec. information

Customer : JOHN DEERE

Engine : 6466 TT

1st version kW : 124.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar : 1.50

Over flow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.7Spread

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Decree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 103.0...109.0)

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

J01

1st rack travel in: 9.30 rpm : 1140...1150 Speed 2nd rack travel in: 4.00

Speed rpm : 1195...1205

4th rack travel in: 1300 Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 19...27 Setting point w/out bumper spring

rpm : 400 Rack travel in mm : 3.8

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00

rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.30...10.40

2nd speed rpm : 700

Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 700 Speed

Del.quantity cm3/: 127.5...130.5 1000 s: (125.0...133.0)

rpm_ : 750 Speed cm3 : 4.00 Spread

1000 s: (5.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (125.0...155.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed : 400 rpm

J02

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 7.001000 s: (9.00)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Starting/full-load transition speed from holding magnet = 450 1/min. ntrol pring retainer. Start-of-delivery mark = 12,5° after start of delivery cyl. 1.

Note remarks

Test sheet : CUM 8,3 a10 Edition : 14.01.88

Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 115

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV400...1100A0C2190 Governor design.

-24R

: 9 420 234 178 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 9 680 271 029

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant,

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95)

J03

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

: 0.50 (0.75)

Tolerance + - 0

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

cm3 : 0.3 Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 99.0...101.0 1000 : (97.0...103.0) cm3 : 3.50 1000 : (6.00) Del.quantity

Spread

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90

Speed rpm : 1305...1315

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1450

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 26...34 Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 4.9

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 5.30...5.50

Rack travel in mm : 2.00

Speed rpm : 470...530

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1305...1315

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.30...5.50

Del.quantity cm3/ : 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: C.D.C. # 391 3329

Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.75...2.85 : (2.70...2.90) Note remarks Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Test sheet : IHC 5,9 b Edition : 15.06.88 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 120 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D32ORS2750 EP type number : 0 410 896 906 BASIC SETTING Governor Governor design. : RQV350...1350AB1236R rpm : 1350 1st speed Governer no. : 9 420 231 021 Rack travel in mm : 11.00...11.10 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 7.1...7.3 Engine : MARS DTA360 100 s: (6.9...7.5) 1st version kW : 134.0 Spread cm3 : 0.3Rated speed : 2700 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) Overflow valve Spread cm3 : 0.3: 2 417 413 038 100 s: (0.5) Inlet press., bar : 2.80 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 110 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 Opening travel mm : 8.50...8.50 pressure, bar : 250...253 rpm : 1500 2nd speed : 9.30...9.50 travel mm Orifice plate 3rd speed rpm : 350 diameter mm : 0,5 travel mm : 1.00...1.00 4th speed rpm : 450 travel mm : 1.90...2.40 Test lines : 1 680 750 008 5th speed rpm : 250 : 0.10...0.50 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x2.00x600

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1535

Rack travel in mm: 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350 Aneroid pressure h: 900

Set equal delivery quant.
per values ____
BEGINNING OF DELIVERY
Test pressure, bar: 27...29

(A) Injection pump setting values

Insp. values in parentheses

Del.quantity : (7.0...75.0)
1000 : (69.0...75.0)
Soread cm3 : 3.50
(6.00)

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.00

Speed rpm : 1405...1435

2nd rack travel in: 4.00

Speed rpm : 1520...1530 4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever position degrees: 8...16

Testing:

Speed : 250 rpm -Minimum rack trave: 7.80 rpm : 350

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed hPa : -Pressure

Rack travel mm : 8.70...8.90

Measurement

Speed 1/min : 500

1st pressure hPa : 305

Rack travel in m: 10.30...10.70

2nd pressure hPa : 175 Rack travel in m: 9.30...9.40

3rd pressure hPa : 900

Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

J06

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: -

1000 s: (53.5...61.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1405...1435 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 125.0...145.0

1000 s: (120.0...150.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 5,9 b 1 Edition : 15.06.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 230 121 Injection pump Pump designation : PES6A95D32ORS275D EP type number : 0 410 896 906 Governor Governor design. : RQV350...1350AB1236-1R Governer no. : 9 420 231 022 Customer-spec. information Customer : NAVISTAR Engine : MARS DT 360 1st version kW : 126.0 Rated speed : 2700 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 110 assembly Opening pressure, bar : 250...253 Orifice plate diameter mm : 0,5 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75)Time to cyl. no. BASIC SETTING 1st speed rpm : 1350 Rack travel in mm : 11.20...11.30 Del.quantity cm3/ : 7.2...7.4 100 s: (7.0...7.6) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 travel mm : 8.50...8.50 rpm : 1590 2nd speed travel mm : 9.30...9.50 rpm : 350 3rd speed : 1.00...1.00 travel mm rpm : 450 4th speed : 1.90...2.40 travel mm rpm : 250 5th speed travel mm : 0.10...0.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1535 Speed Rack travel in mm : 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350

Speed

per values

BEGINNING OF DELIVERY

Aneroid pressure h: 900

Aneroid production of the prod

RATED SPEED

1st version Control lever

position degrees: 46...54

Testing:

1st rack travel in: 10.20

Speed rpm : 1400,...1430

2nd rack travel in: 4.00

rpm : 1525...1535 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 250 Minimum rack trave: 7.80

Speed rpm : 350

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom Pressure hPa : -

: 8.40...8.60 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 480

Rack travel in m: 10.70...11.10

2nd pressure hPa : 240

Rack travel in m: 9.30...9.40

3rd pressure hPa : 900

Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: ~ rpm : 500 Speed

Del.quantity cm3/: -

1000 s: (46.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1400...1430

STARTING FUEL DELIVERY

Speed rpm : 190

Del.quantity cm3/: 125.0...145.0

1000 s: (120.0...150.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm

:

before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : 1HC 5,9 c Edition : 15.06.88 Replaces Test oil : 180-4113 Combination no. : 9 400 230 122 Injection pump Pump designation : PES6A95D32ORS2745 EP type number : 9 410 230 033 Governor Governor design. : RQV350...1350AB1236-Governer no. : 9 420 231 023 Customer-spec. information Customer : NAVISTAR Engine : MARS DTA360 1st version kW : 130.0 : 2700 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar : 2.80 Test nozzle holder assembly : 1 688 901 110 Opening pressure, bar : 250...253 Orifice plate diameter mm : 0,5 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6,00x2,00x600

(A) Injection pump setting values

Set equal delivery quant.

per values

Test pressure, bar: 27...29

BEGINNING OF DELIVERY

Insp. values in parentheses

Phasing Tolerance + - 0 BASIC SETTING 1st speed Spread Spread travel mm 2nd speed travel mm travel mm travel mm travel mm 1st version Speed

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 : 0.50 (0.75) Time to cyl. no. : 1 rpm : 1350 Rack travel in mm : 11.30...11.40 Del.quantity cm3/: 7.4...7.6 100 s: (7.2...7.8) cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1400 : 8.50...8.50 rpm : 1500 : 9.30...9.50 3rd speed rpm : 350 : 1.00...1.00 4th speed rpm : 450 : 1.90...2.40 5th speed rpm : 250 : 0.10...0.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1535 Rack travel in mm : 6.70...9.30 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1350

109

Aneroid pressure h: 900

: 74.0...76.0 Del.quantity

1000 : (72.0...78.0) cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 44...52

Testing:

1st rack travel in: 10.30

rpm : 1410...1440 Speed

2nd rack travel in: 4.00

Speed rpm : 1535...1545

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 250 Minimum rack trave: 7.80

Speed rpm : 350 Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rem : 350...500

Aneroid/Altitude Compensator Test

1st version

Setting

rom : 500 Speed hPa : -Pressure

Rack travel mm : 8.20...8.40

Measurement

1/min : 500 Speed

1st pressure hPa : 375

Rack travel in m: 10.60...11.00

2nd pressure hPa : 190

Rack travel in m: 9.10...9.20

3rd pressure hPa : 900

Rack travel in m: 11.30...11.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/:-

1000 s: (46.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1410...1440

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 13.0...17.0

1000 s: (10.5...19.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

: DEE 10,1 a8 : 6.5.88 : 5.3.87 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 231 009

Injection pump

Pump designation : PES6P110A720RS370

EP type number : 0 412 016 052

Governor

Governor design. : RSV400...105000/453

DR

Governer no. : 9 420 234 011

Customer-spec. information

Customer : JOHN DEERE

Engine : 6619 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 40...45

Overflow valve

: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm *: 2.75...2.85*

: (2.70...2.90)

Rack travel in mm : 13.10

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.5(0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 18.3...18.5

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

rpm : 400 2nd speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 1.8...2.6

100 s: (-)

cm3 : 0.4Spread

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 600

Del.quantity : 183.0...185.0

1000 : (180.0...188.0) cm3 : 4.0

Spread

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 12.10

Speed rpm : 1095...1105

2nd rack travel in: 6.20

Speed rpm : 1135...1165

4th rack travel in: 1300

Speed rpm : 0.30...1.30

LOW IDLE 1 Control lever Speed Rack travel in mm: 6.00 Testing: Speed Minimum rack trave: 19.00

position degrees: 16...24 Setting point w/out bumper spring rpm : 400

rpm : 100

rpm : 400

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00 Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 13.10...13.20

2nd speed rpm : 650

Rack travel in m: 13.90...14.00

Aneroid/Aititude Compensator Test

1st version Setting

Speed rpm : 550 hPa : 580 Pressure

Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 550

1st pressure hPa : 220

Rack travel in m: 11.10...11.50

2nd pressure hPa : -

Rack travel in m: 10.30...10.50

START CUT-OUT

1/min : 450...750 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 rpm : 630 Speed

Del.quantity cm3/: 201.5...204.5 1000 s: (198.5...207.5) cm3 : 6.0

Spread

1000 s: (9.0)

Aneroid pressure h: rpm_ : 550 Speed

Del.quantity cm3/: 113.0...119.0 1000 s: (110.0...122.0) Spread cm3 : 6.01000 s: (9.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 183.0...203.0

1000 s: (-)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1150

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 44.0...66.0

1000 s: (-) cm3 : 4.0

Spread 1000 s: (-)

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 18.0...26.0

1000 s: (-)

Spread cm3 : 4.01000 s: (-)

Remarks:

: JOHN DEERE NO. AR

: 88765

Start-of-delivery mark is at 15° angular displacement of the cam after start of delivery at cylinder 1 with control-rod travel 9.00...12.00 mm

APPLICATION Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DEE 10,1 a3 Phasing : 0-60-120-180-240-300 : 15.06.88 Edition Replaces Tolerance + - D : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 9 400 231 039 BASIC SETTING Injection pump Pump designation : PES6P110A720RS370 1st speed rpm: 1050 EP type number : 0 412 016 052 Governor Rack travel in mm : 12.40...12.50 Governor design. : RSV450...1050P0A465 Governer no. : 9 420 234 180 Del.quantity cm3/: 17.4...17.6 Customer-spec. information 100 s: (17.1...17.9) Customer : JOHN DEERE Spread cm3 : 0.4Engine : 6619A 100 s: (0.7) 1st version kW : 201.0 Rated speed : 2100 rpm : 450.0 2nd speed Rack travel in mm: 5.9...6.1 TEST BENCH REQUIREMENTS Dei.quantity cm3/: 1.9...2.5 100 s: (1.7...2.7) Test oil cm3 : 0.4Spread inlet temp. °C : 38...42 100 s: (0.7) Overflow valve GUIDE SLEEVE POSITION : 1 457 413 010 Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x :? Opening. pressure, bar : 172...175 1st version Test lines : 1 680 750 015 Speed rpm : 1050 Aneroid pressure h: 700 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm : 4.00 cm3 Spread 1000 : (7.50) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant. per values 1st version Control lever BEGINNING OF DELIVERY position degrees: 38...46 Test pressure, bar: 27...29

Rack travel in mm : 0.30...0.70 FULL LOAD DELIV. AT FULL LOAD STOP Del.quantity : 174.0...176.0 1000 : (171.0...179.0) Testing: 1st rack travel in: 11.40 Speed rpm : 1090...1100 2nd rack travel in: 4.00

J13

Prestroke mm

Rack travel in mm: 10.50

: 2.75...2.85 : (2.70...2.90)

Speed rpm : 1205...1235 4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 16...24 Setting point w/out bumper spring

Speed Lbw : 450 Rack travel in mm: 5.5

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 450

Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 580...640

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.40...12.50

2nd speed rpm : 650

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed L IDW

Pressure hPa : -

: 10.50...10.70 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : 280

Rack travel in m: 11.40...11.80

2nd pressure hPa : 590

Rack travel in m: 13.60...13.70

3rd pressure hPa : 700

Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed : 650 rpm

Del.quantity cm3/: 198.5...201.5 1000 s: (195.0...205.0)

Aneroid pressure h: -

: 500 Speed r pm

Del.quantity cm3/:-

1000 s: (123.0...133.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 17.0...21.0

1000 s: (165.0...215.0) Rack travel in mm: 20.00...21.00

HIGH IDLE

1st version

Speed rpm : 1170

Rack travel in mm : 7.40...7.60

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 19.0...25.0

1000 s: (17.0...27.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at control-rod travel 10.5 mm and 15^{0} after start of Screw in torque-control-spring retainer to make contact at 650 l/min.

Note remarks

Test sheet : MB 5,7 n21 Edition : 19.08.88

Replaces

Test oil : ISO 4113

Combination no. : 9 407 083 200

Injection pump

Pump designation : PES6A90D410RS2293

Governor

Governor design. : RQV300...1425AB884L

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 352

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25

(2,10...2,30)
Rack travel in mm: 9,00...12,00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - 0 : 0.5(0.75) BASIC SETTING

1st speed rpm: 1000

Rack travel in mm: 9,00

Del.quantity cm3/: 4,5...5,0

100 s: (-)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 200

Rack travel in mm : 9,00 Del.quantity cm3/ : 2,0...2,8

100 s: (-)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 57.0...59.0 Deliquantity

1000 : (-)

: 4.0 Spread cm3

1000 : (-)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 17.70

Speed rpm : 1410...1440

2nd rack travel in: 4.75

rpm : 1620...1680 Speed

4th rack travel in: 1780 Speed rpm : <0

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed : 100 rpm Minimum rack trave: 6,60 rpm : 250 Speed

Rack travel in mm : 5,50...7,00

Rack travel in mm: 1.40

rpm : 620...689 Speed

CONSTANT REGULATION

: 400...600 Speed rpm

START CUT-OUT

Speed 1/min: 220

BREAKAWAY

1st version Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 13,70...14,30

Remarks:

Note remarks

Test sheet : MWM 5,9 i3 Edition : 16.08.88

Replaces

Test oil : ISO-4113

Combination no. : 9 407 083 256

Injection pump

Pump designation : PES6A90D320RS2605

Governor

Governor design. : RSV325...1325A2B2096

Customer-spec. information Customer

Engine : TD 229-6

1st version kW : 118 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter x Wall thickness

x Length mm : 6,00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2,20...2,30 Prestroke mm : (2,15...2,35)

Rack travel in mm : 9,00...12,00 Firing order : 1-5-3-6-2-4

J17

Phasing : 0-60-120-180-240 Tolerance + - 0 : 0,5(0,75) Phasing

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8,80 & maximum rack tra: 21,00 Difference CS: 4...5

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 8,75...8,85

Del.quantity cm3/ : 7,20...7,30

100 s: (7,00...7,50)

Spread cm3 : 0.3

100 s: (0,5)

2nd speed rpm : 325

Rack travel in mm : 6,90...7,10

Del.quantity cm3/: 1,3...1,7 100 s: (1,1...1,9)

cm3 : 0,25 Spread

100 s: (0,45)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...1,00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

72,0...73,0 1000 : (70,0...75,0) Del. quantity

: 3,0 : (\$,0) Spread cm3

1000

RATED SPEED

1st version Control lever

position degrees: 50...58

Testing:

1st rack travel in: 7.80 Speed rpm : 1365...1375

2nd rack travel in: 4,00

Speed rpm : 1410...1440

3rd rack travel in: 0,30...1,70

Speed rpm : 1500 LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 5,40...5,60 Testing: rpm : 100 Speed Minimum rack trave: 19,00 Speed rpm : 325
Rack travel in mm : 5,90...6,10
Rack travel in mm : 2,00 Speed rpm : 580...640 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 8,75...8,85 2nd speed rpm : 1000 Rack travel in m: 8,85...9,15 3rd speed rpm : 800 Rack travel in m: 9,05...9,25 4th speed rpm : 500 Rack travel in m: 9,15...9,25 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 7000 Del.quantity cm3/: 67.5...69.5 1000 s: (65.0...72.0) Speed rpm : 1000 Speed rpm : 800 Del.quantity cm3/ : 62,0...64,0 1000 s: (59,5...66,5) rpm : 500 Speed Del.quantity cm3/: 54,0...56,0 1000 s: (51,5...58,5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7,80 Speed rpm : 1365...1375 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm: 19,00

LOW IDLE

rpin : 325

Speed

J18

Rack travel in mm : 6,90...7.10 Del.quantity cm3/ : 13,5...17,5 1000 s: (11,5...19,5) Spread cm3 : 2,5

1000 s: (4,5)

Remarks:

Note inst. in remarks column

Test sheet : FIA 1,7 H1 Edition : 02.08.88 replaces : 14.07.87 Calibrating oil : ISO 4113

Injection pump : VE 4/10F2050 R192 : 0 450 404 040 Type number

Customer-specific information Customer : IVECO-SOFIM

Engine : 8144.91.200

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02 (0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 800 Setting value mm: 6,6...7,0

Supply-pump pressure:

Speed 1/min: 1500 Change press. hPa: 800 Setting value bar: 6,6...7,2 Full-load del. with charge press .:

Speed 1/min: 1500 Charge press. hPa: 800

Del.quantity cm3/ 1000H.: 56,0...57,0

Dispersion cm3/:3,01000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600

Del.quantity cm3/

1000H.: 43.5...44.5

Low-idle speed regulation:

Speed 1/min: 400 Deliquantity cm3/

1000H.: 9.0...13.0 cm3/: 3.0 Dispersion 1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2250 Charge press. hPa: 800

Del.quantity cm3/

1000H: 34,5...40,5

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 44,0

Load-dependent start of delivery:

Speed 1/min: 600

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600 Charge press. hPa: 800

mm: 2,6...3,4 mm: (2,3...3,7) TD travel

1/min: 1500

2nd speed Charge press. hPa: 800 TD travel

mm: 6,6...7,0 mm: (6,3...7,3)

3rd speed 1/min: 2950 Charge press. hPa: 800 TD travel

mm: 7.8...8.6 mm: (7,5...8,9)

Supply-pump pressure characteristic:

	Del.quantity cm3/: 55,558,5
1st speed 1/min: 600	10 00 H: -
Charge press. hPa: 800	9th speed 1/min: 600
Supp Ty-pump	Charge press. hPa: -
pressure bar: 4.14.7	Del.quantity cm3/: 43,544,5
2nd speed 1/min: 1500	1000H: (41,546,5)
Charge press. hPa: 800	100011. (11,50,11,10,5)
Supply-pump	Zero delivery (stop):
pressure bar: 6,67,2	zer v de trver y tseepr.
3rd speed 1/min: 2050	
Charge press. hPa: 800	Electr. shutoff:
Supply-pump i	Elect . Sildlott.
pressure bar: 8,28,8	Speed 1/min /00
	Speed 1/min: 400
Aventles aspetits at aventles value	ELAB volt: -
Overflow quantity at overflow valve:	Del.quantity_cm3/: 0,03,0
1at and 17 in 199	max. 1000H.: -
1st speed	•
Charge press. hPa: 800	Idle delivery:
Oveflow : 4183	
quantity cm3/10s: (2698)	1st speed 1/min: 400
2nd speed 1/min: 2050 !	Del.quantity cm3/: 9,013,0
Charge press. hPa: 800	1000H.: (7,015,0)
Over7low : 55138	2nd speed 1/min: 450
quantity cm3/10s: (40153)	Del.quantity cm3/: 1,56,5
	1000H.: -
Delivery-quant. and breakaway char.:	3rd speed 1/min: 500
, ,	Del.quantity cm3/: 0,55,5
1st speed 1/min: 800	1000H.: -
Charge-air pressure-setting !	4th speed 1/min: 700
point hPa: 250	Del.quantity cm3/: 0,03,0
LDA stroke mm: 4,5	1000H.: -
Del. quantity cm3/: 43,544,5	1000n.; -
	As attached the advantage of the last to the
1000H.: (41,546,5)	Automatic starting fuel delivery:
2nd speed 1/min: 2400	4
Charge press. hPa: 800	1st speed 1/min: 450
Del.quantity cm3/: 0,03,0	Deloquantity cm3/: - ind. 1000H: 47,0
1000H.: -	ind. 1000H: 47,0
3rd speed 1/min: 2350	
Charge press. hPa: 800	2nd speed 1/min: 500
Del.quantity cm3/: 1,58,5	Deliquantity cm3/: -
1000H,: -	max. 1000H: 46,0
4th speed 1/min: 2250	•
Charge press. hPa: 800	Shutoff electromagnet:
Deliquentity cm3/: 34,540,5	•
1000H.: (33,541,5)	Cut-in
5th speed 1/min: 2050	min. voltage : 10,0
Charge press. hPa: 800	Rated voltage : 12,0
Del.quantity cm3/: 48,551,5	, , , , , , , , , , , , , , , , , , ,
1000H.: (47,852,2)	Mounting and assembly dimensions:
6th speed 1/min: 1500	routering and absolubity difficultivities.
Charge press. hPa: 800	Designation
Dei.quantity cm3/: 56,057,0	1/
1000H.: (54,558,5)	· -
	MS mm : 1,11,5
Charge press. hPa: 250	SVS max. mm : 4.2 XK mm : 17.019.0
Del.quantity cm3/; 51.552.5	XK mm: 17,019,0
1000H.; (49,554,5)	XL mm : 11,414,8
8th speed 1/min; 600	O according
Charge press. hPa: 800	Remarks:
	Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : MAN 3,7F Edition : 02.08.88

replaces

Calibrating oil : ISO 4113

: VE 4/10F1500 R57-6 Injection pump

Type number : 0 460 404 045

Customer-specific information

Customer

Engine : DO 224M

TEST BENCH REQUIREMENTS

Calibrating-oil OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm : 0,2

(from BDC): +-0,02 (0,04)

Indicator setting: Piston stroke mm: 1.0

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Setting value mm: 5,2...5,6

Supply-pump pressure:

Speed 1/min: 1000 Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

Speed 1/min : 1000

Del.quantity cm3/

1000H.: 63,5...64,5

cm3/: 2,5 Dispersion

1000H.: (3,0)

Low-idle speed regulation:

1/min: 350 Speed

Del.quantity cm3/

1000H.: 10,0...14,0

cm3/: 2,0 Dispersion 1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1650

Del.quantity cm3/

1000H: 4,0...10,0

Start:

Speed 1/min: 100

Del.quantity mind cm3/1000H.: 60,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600

mm: 2,1...2,9 mm: (1,8...3,2) TD travel

1/min: 1000 2nd speed mm: 5,2...5,6 TD travel

mm: (4,7...6,1) 1/min: 1400

3rd speed

mm: 7.8...8.6 mm: (7.5...8.9) TD travel

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 3,6...4,2 pressure

1/min: 1000 2nd speed

Supply-pump

pressure bar: 5,5...6,1

3rd speed 1/min: 1400

Supply-pump

pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

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1st speed 1/min: 600 : 41...83 Oveflow cm3/10s: (26...98) quantity 2nd speed 1/min: 1500 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1740 1st speed Del.quantity cm3/: 0.0...2.0 1000H.: -2nd speed 1/min: 1650 Del.quantity cm3/: 4,0...10,0 1000H.: (2,5...11,5) 1/min: 1550 3rd speed Del.quantity cm3/: 0,0...60,0 1000H.: -1/min: 1480 4th speed Del.quantity cm3/: 67,5...70,5 1000H.: (66,4...71,6) 1/min: 1000 5th speed Del.quantity cm3/: 65,5...04,3 1000H.: (61,4...66,6) 6th speed 1/min: 600 Del.quantity cm3/: 58,3...61,7 1000H.: (56,6...63,4) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1500 Delouantity cm3/: -1000H.: -Idle delivery: 1st speed 1/min: 350 Del.quantity cm3/: 10,0..14,0 1000H.: (7,5...16,5) 1/min: 380 2nd speed Del.quantity cm3/: 4.0...8.0 1000H.: (1.5...10.5) 3rd speed 1/min: 450 Del.quantity cm3/: 0,0...2,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 350 Del.quantity cm3/: -1000H: 70,0 ind. 1/min: 450 2nd speed Deliquantity cm3/: -1000H : 70,0 max.

Cut-in min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,6...6,0
MS mm : 1,0...1,4
XK mm : 17,0...19,0
XL mm : 13,6...17,0

Remarks:

Shutoff electromagnet:

Note inst. in remarks column

: SOF 2,5 01 Test sheet Edition : 03.08.88 replaces : 14.03.88 Calibrating oil : ISO 4113

: VE 4/10F2050 R295-1 Injection pump

Type number : 0 460 404 060

Customer-specific information Customer : IVECO-SOFIM

Engine : 8144.91.2101

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening.

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm : 0,2

(from BDC): +-0.02(0.04)

Indicator setting: Piston stroke mm: 1.0

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 600 Charge press. hPa: 800

Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 800

Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 800
Del.quantity cm3/
1000H.: 59,5...60,5
Dispersion cm3/: 3,0
1000H: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600

Del.quantity cm3/

1000H.: 45,5...46,5

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 13.0...17.0 Dispersion cm3/: 3.0 1000H.: (3.0)

Full-load speed regulation:

Speed 1/min: 2325 Charge press. hPa: 800

Deliquantity cm3/

1000H: 13,0...19,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 45,0 mind

Load-dependent start of delivery:

Speed 1/min: 600

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 600 1st speed Charge press. hPa: 800

TD travel mm: 1,8...2,2 mm: (1,5...2,5)

2nd speed 1/min: 1500 Charge press. hPa: 800

TD travel mm: 5,6...6,4 mm: (5,3...6,7)

3rd speed 1/min: 2000

Charge press. hPa: 800

mm: 8.1...8.9 mm: (7.8...9.2) Charge press. hPa: -Del.quantity cm3/: 45,5...46,5 1000H: (43,5...48,5) Supply-pump pressure characteristic: Zero delivery (stop): 1st speed 1/min: 600 Charge press. hPa: 800 Supply-pump Electr. shutoff: bar: 3.1...3.7 1/min: 1500 pressure 2nd speed Speed 1/min: 400 Charge press. hPa: 800 ELAB volt: -Supply-pump Del.quantity cm3/: 0,0...3,0 bar: 5,1...5,7 1/min: 2000 pressure 1000H.: -3rd speed Charge press. hPa: 800 Idle delivery: Supply-pump pressure bar: 6,3...6,9 1/min: 400 1st speed Del. quantity cm3/: 13,0..17,0 1000H.: (11,0..19,0) Overflow quantity at overflow valve: 2nd speed 1/min: 450 1st speed 1/min: 600 Del.quantity cm3/: 4,0...9,0 1000H.: -Charge press. hPa: 800 Oveflow : 41...83 3rd speed 1/min: 500 quantity cm3/10s: (26...98) 2nd speed 1/min: 2000 Del.quantity cm3/: 3,5...8,5 1000H.: -Charge press. hPa: 800 1/min: 700 4th speed Overflow | : 55...138 Del.quantity cm3/: 1,5...4,5 quantity cm3/10s: (40...153) 1000H.: -Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 1/min: 800 1st speed 1st speed 1/min: 450 Charge-air pressure-setting Del.quantity cm3/: hPa: 290 point ind. 1000H: 42,5 Del.quantity cm3/: 49.5...50.5 1000H.: (47.5...52.5) 2nd speed 1/min: 2400 2nd speed 1/min: 500 Del.quantity cm3/: -Charge press. hPa: 800 1000H : 46,0 Del.quantity cm3/: 0,0...3,0 1000H.: -Shutoff electromagnet: 3rd speed 1/min: 2325 Del.quantity cm3/: 13.0...19.0 1000H.: (12.0...20.0) 4th speed 1/min: 2000 Cut-in min. voltage : 10,0 Rated voltage : 12,0 Charge press. hPa: 800
Del.quantity cm3/: 53.5...56.5
1000H.: (52.8...57.2) Mounting and assembly dimensions: 1/min: 1500 5th speed Designation Charge press. hPa: 800 K mm : -Del.quantity cm3/: 59.5...60.5 1000H.: (58.0...62.0) KF mm : 5,6...6,0mm : 1,1...1,5 1/min: 800 6th speed Charge press. hPa: 290 Remarks: Del.quantity cm3/: 49.5...50.5 1000H.: (47.5...52.5) Correction at adjusting nut (46) 1/min: 600 7th speed Charge press. hPa: 800 Del.quantity cm3/: 54,5...57,5 1000H.: -

8th speed

1/min: 600

TD travel

Note inst. in remarks column

Test sheet : VWW 2,4 M Edition : 02.08.88 replaces : 04.11.87 Calibrating oil : ISO 4113

: VE 6/10F2150 L152 Injection pump : 0 460 406 040 Type number

Customer-specific information

Customer : VW

Engine : 087T-LT

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1000 Speed Charge press. hPa: 750

mm: 0,5...1,3 Setting value

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 5,5...6,1 Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

Deliquantity cm3/

1000H.: 41,5...42,5

cm3/ : 2,5 Dispersion

1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600

Del.quantity cm3/

1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 375

Deliquantity cm3/

1000H.: 6,0...10,0

Dispersion cm3/: 2.01000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2400 Charge press. hPa: 750

Deliquantity cm3/

1000H: 10,0...14,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 35.0 mind i

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press. hPa: 750

TD travel mm: 0,5...1,3mm: (0,2...1,6)

2nd speed 1/min: 1500 Charge press. hPa: 750

TD travel

mm: 2,3...2,7 mm: (1,8...3,2) 1/min: 2150 3rd speed Charge press. hPa: 750 TD travel

mm: 4,4...5,2 mm: (4,1...5,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600 Change press. hPa: 750

Supply-pump bar: 3,1...3,7 1/min: 1500 pressure Zero delivery (stop): 2nd speed Charge press. hPa: 750 Supply-pump Electr. shutoff: bar: 5,5...6,1 pressure 3rd speed 1/min: 2150 Speed 1/min: 375 Charge press. hPa: 750 volt: -Supply-pump Del.quantity cm3/: 0,0...3,0 pressure bar: 7,2...7,8 1000H.: -Overflow quantity at overflow valve: Idle delivery: 1st speed 1/min: 600 1/min: 375 cm3/: 6,0...10,0 1st speed Del.quantity cm3/: 6,0...10,0 1000H.: (4,0...12,0) Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2150 2nd speed 1/min: 450 Overflow : 55...138 Del.quantity cm3/: 0,0...3,0 quantity cm3/10s: (40...153) 1000H.: -Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 1st speed 1/min: 750 1st speed 1/min: 400 Charge-air pressure-setting Del.quantity cm3/: point hPa: 300 ind. 1000H: 25,0 LDA stroke mm: 4,5 Del.quantity cm3/: 32,5...33,5 1000H.: (30,0...36,0) 2nd speed 1/min: 500 Deliquantity cm3/: -1/min: 2600 2nd speed 1000H : 27,0 Charge press. hPa: 750
Del.quantity cm3/: 0,0...3,0
1000H.: -Shutoff electromagnet: 1/min: 2400 3rd speed Cut-in Charge press. hPa: 750 min. voltage : 10,0 Del.quantity cm3/: 10,0...14,0 Rated voltage : 12,0 1000H.: (8,0...16,0) 1/min: 2300 4th speed Mounting and assembly dimensions: Charge press. hPa: 750 Del.quantity cm3/: 20.5...30.5 1000H.: (19.5...31.5) Designation 4 , 2 . . . 3 و 3 HEIL 5th speed 1/min: 2150 Charge press. hPa: 750 Del.quantity cm3/: 35,5...37,5 1000H.: (34,3...38,7) KF mm 6 و 2 . . . 6 و 6 MS : 0,9...1,3 mm SVS max. men 1/min: 1500 6th speed Remarks: Charge press. hPa: 750 Correction at adjusting nut (46) Del. quantity cm3/: 41,5...42,5 1000H.: (39,8...44,2) 1/min: 750 7th speed Charge press. hPa: 300 Del.quantity cm3/: 32,5...33,5 1000H.: (30,0...36,0) 8th speed 1/min: 600 Charge press. hPa: 750 Del.quantity cm3/: 38.0...41.0 1000H: (36.5...42.5) 9th speed 1/min: 600 Charge press. hPa: -Del.quantity cm3/: 23,5...24,5 1000H: (21,0...27,0)

Note inst. in remarks column

: FIA 3,6K Test sheet Edition : 03.08.88 replaces : 20.07.87 Calibrating oil : ISO 4113

: VE 4/11F1350 R257 Injection pump Type number : 0 460 414 039

Customer-specific information : IVECO-FIAT

Engine : 8040.25.200

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,4

(from BDC): +-0,02 (0,04)

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Charge press. hPa: 1000 Setting value mm: 3,8...4,2 Supply-pump pressure:

1/min: 1000 Charge press. hPa: 1000 Setting value bar: 5,7...6,3

Full-load del. with charge press.:

Speed 1/min: 800 Charge press. hPa: 1000

Deliquantity cm3/

1000H.: 93.5...94.5 cm3/: 5.0

Dispersion 1000H : (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 500

Del.quantity cm3/

1000H.: 68,5...69,5

Low-idle speed regulation:

Speed 1/min: 350

Del.quantity cm3/ 1000H.: 22.0...26.0 Dispersion cm3/: 3.5

1000H.: (4,0)

Full-load speed regulation:

1/min: 1500 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 34,0...40,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 90.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800 Charge press. hPa: 1000

TD travel mm: 1,7...2,5 mm: (1,4...2,8)

1/min: 1000 2nd speed Charge press. hPa: 1000

TD travel mm: 3,8...4,2 mm: (3,3...4,7)

3rd speed 1/min: 1350

Charge press. hPa: 1000

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mm: 6.3...7.1mm: (6.0...7.4)Tù travel Del.quantity cm3/: 85,0...88,0 1000H.: (83,5...89,5) 7th speed 1/min: 500 Supply-pump pressure characteristic: Charge press. hPa: 250 Del.quantity cm3/: 79.0...80.0 1000H.: (76,5...82,5) 1st speed 1/min: 500 Charge press. hPa: 1000 1/min: 500 8th speed Supply-pump Del.quantity cm3/: 68,5...69,5 bar: 3,6...4,2 1/min: 800 pressure 1000H: (66,0...72,0) 2nd speed Charge press. hPa: 1000 Zero delivery (stop): Supply-pump bar: 4,8...5,4 pressure Mech. shutoff: 3rd speed 1/min: 1000 Charge press. hPa: 1000 1/min: 1350 Speed Del.quantity cm3/: 0..3 1000H.: -Supply-pump bar: 5,7...6,3 1/min: 1350 pressure 4th speed Charge press. hPa: 1000 Electr. shutoff: Supply-pump pressure bar: 7,0...7,6 Speed 1/min: 350 ELAB volt: -Overflow quantity at overflow valve: Del.quantity cm3/: 0,0...3,0 1000H.: -1st speed 1/min: 500 Charge press. hPa: 1000 Idle delivery: Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1350 1/min: 350 1st speed Del.quantity cm3/: 22,0..26,0 Charge press. hPa: 1000 1000H.: (19,0..29,0) Over flow : 55...138 1/min: 400 2nd speed Del.quantity cm3/: 2,5...9,5 1000H.: (2,5...9,5) quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 3rd speed 1/min: 430 Del.quantity cm3/: 0,0...3,0 1000H.: -1st speed 1/min: 500 Charge-air pressure-setting point hPa: 250 Automatic starting fuel delivery: LDA stroke mm: 3.0 Del.quantity cm3/: 79.0...80.0 1st speed 1/min: 150 1000H.: (76,5...82,5) Deliquantity cm3/: -1/min: 1600 1000H: 90,0 2nd speed ind. Charge press. hPa: 1000 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 230 Del.quantity cm3/: -3rd speed 1/min: 1500 1000H: 60,0 max. Charge press. hPa: 1000 Del.quantity cm3/: 34.0...40.0 1000H.: (31.0...43.0) 4th speed 1/min: 1350 Shutoff electromagnet: Cut-in Charge press. hPa: 1000 min. voltage : 20,0 Del. quantity cm3/: 87,5...90,5 Rated voltage : 24,0 1000H.: (86,0...92,0) 1/min: 800 5th speed Mounting and assembly dimensions: Charge press. hPa: 1000 Del.quantity cm3/: 93,5...94,5 1000H.: (91,0...97,0) Designation K mm : -1/min: 500 mm : 5,1...5,5 6th speed KF Charge press. hPa: 1000 MS mm : 1,2...6 SVS max. mm : 5,3

XK mm : 17,0...19,0 XL mm : 14,2...17,6

Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : FIA 3,6 K1 Edition : 03.08.88 replaces : 18.12.86 Calibrating oil : ISO 4113

Injection pump : VE 4/11F1500 R264 Type number : 0 460 414 040

Customer-specific information Customer : IVECO-FIAT

: 8040.05.200 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm: 0,2 (from BDC): +-0.02 (0,04)

Indicator setting:

Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Setting value mm: 3,5...3,9 Supply-pump pressure:

1/min: 1000 Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:

1/min : 1000 Speed

Del.quantity cm3/

1000H.: 55.0...56.0 cm3/: 3.5

Dispersion 1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 325

Del.quantity cm3/

1000H.: 7,0...11,0

cm3/: 3,5 Dispersion 1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1600

Deliquentity cm3/

1000H: 38,0...44,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 60.0 mind

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700

mm: 0,6...1,4 TD travel mm: (0,3...1,7)

1/min: 1000 2nd speed

TD travel mm: 3.5...3.9mm: (3.0...4.4)

3rd speed 1/min: 1300

TD travel mm: 5,8...6,4

mm: (5,4...6,8)

1/min: 1500 4th speed

TD travel mm: 6,2...7,0 mm: (5,9...7,3)

Supply-pump pressure characteristic:

1st speed 1/min: 700

Supply-pump

bar: 3,2...3,8 pressure

2nd speed 1/min: 1000

Supply-pump

bar: 4,5...5,1 pressure

1/min: 1500 3rd speed Supply-pump pressure bar: 6,3...6,9 Overflow quantity at overflow valve: 1st speed 1/min: 700 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1500 Over flow : *55...*138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 1700 1st speed Del.quantity cm3/: 0.0..3.0 1000H: (0.0..3.0) 2nd speed 1/min: 1660 Del.quantity cm3/: 18.0...26.0 1000H.: (17.0...27.0) 3rd speed 1/min: 1600 Del.quantity cm3/: 38.0...44.0 1000H.: (35.0...46.0) 1/min: 1500 4th speed Del.quantity cm3/: 52.5...55.5 1000H.: (51.0...57.0) 1/min: 1300 5th speed Del.quantity cm3/: 51.5...54.5 1000H.: (50.0...56.0) 6th speed 1/min: 1000 Del.quantity cm3/: 55.0...56.0 1000H.: (52.5...58.5) 7th speed 1/min: 700 Del.quantity cm3/: 53,0...56,0 1000H.: (51,5...57,5) Zero delivery (stop): Mech. shutoff: 1/min: 1500 Speed Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 325 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H .: max. Idle delivery: 1st speed 1/min: 325 Del.quantity cm3/: 7.0...11.0 1000H.: (5.0...13.0)

1/min: 360

Del.quantity cm3/: 1,5...7,5 1000H.: (0,5...8,5)

3rd speed 1/min: 420 Del.quantity cm3/: 0,0...3,0 1000H.: (0,0...3,0) Automatic starting fuel delivery: 1st speed 1/min: 150 Deliquantity cm3/: ind. 1000H: 65,0 2nd speed 1/min: 230 Del.quantity cm3/: - max. 1000H: 25,0 Shutoff electromagnet: Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation K mm : 5,2...5,5 KF mm

: 1,7...2,1 MS mm : 4,6 : 17,0...19,0 SVS max. (TET) XK mm XL mm 5, 13, 11, 13

Remarks:

2nd speed

Note inst. in remarks column

Test sheet : VMA 3,6E1 Edition : 03.08.88 replaces : 03.85 Calibrating oil : ISO 4113

Injection pump Type number : VE 6/11F1900 L178 Type number : 0 460 416 035

Customer-specific information Customer : VM MOTORI

Engine : HR 692 HTI/9

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0,02 (0,04)

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Charge press. hPa: 750 Setting value mm: 4,7...5,1

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

Del.quantity cm3/ 1000H.: 66.0...67.0 Dispersion cm3/: 3.5

1000H : (4,0)

Full-load del. w/out charge press.:

 $1/\min : 600$ Del.quantity cm3/

1000H.: 47,5...48,5

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/ 1000H.: 18,0...22,0

Full-load speed regulation:

Speed 1/min: 2000 Charge press. hPa: 750

Deliquantity cm3/

1000H: 46,0...52,0

Start:

Speed 1/min: 100 Del.quantity mind cm3/1000H.: 45.0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 750

TD travel mm: 1,8,..2,6

mm: (1,5...2,9)2nd speed 1/min: 1500 Charge press. hPa: 750

TD travel mm: 4.7...5.1 mm: (4.2...5.6) 1/min: 1850

3rd speed Charge press. hPa: 750

mm: 6,5...7,3 mm: (6,2...7,6) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 600

Charge press. hPa: 750 Supply-pump 1st speed 1/min: 400 bar: 2,4...3,0 1/min: 1500 Del.quantity cm3/: 18.0..22.0 1000H.: (15.5..24.5) pressure 2nd speed Charge press. hPa: 750 1/min: 500 2nd speed Supply-pump Del.quantity cm3/: 7,5...12,5 bar: 5,5...6,1 1000H.: (5,5...14,5) pressure 1/min: 1850 3rd speed 1/min: 600 3rd speed Charge press. hPa: 750 Del.quantity cm3/: 0,0...4,0 1000H.: -Supply-pump pressure bar: 6,7...7,3 Automatic starting fuel delivery: Overflow quantity at overflow valve: 1st speed 1/min: 350 1/min: 600 1st speed Del.quantity cm3/: -Charge press. hPa: 750 1000H: 42,0 ind. Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 400 2nd speed 1/min: 1900 Charge press. hPa: 750 Del.quantity cm3/: -1000H : 45_0 max. Over Flow : 55...138 quantity cm3/10s: (40...153) Shutoff electromagnet: Delivery-quant. and breakaway char.: Cut-in min. voltage : 10,0 1st speed 1/min: 600 Rated voltage : 12,0 Charge-air pressure-setting point hPa: 300 Mounting and assembly dimensions: LDA stroke LDA stroke mm: 4,0 Del.quantity cm3/: 53,0...54,0 Designation 1000H.: (50,1...56,9) K min 1/min: 2130 : 6,2...6,6 2nd speed KF mm Charge press. hPa: 750 MS 2 ـ 1 . . . 8 ـ ر0 mm Del.quantity cm3/: 2.5...10.5 1000H.: (2.0...11.0) SVS max. man 3rd speed 1/min: 2000 Remarks: Charge press. hPa: 750 Del.quantity cm3/: 46.0...52.0 1000H.: (44.5...53.5) Correction at adjusting nut (46) 4th speed 1/min: 1850 Charge press. hPa: 750
Del.quantity cm3/: 61.0...64.0
1000H.: (59.9...65.1) 5th speed 1/min: 1500 Charge press. hPa: 750 Del.quantity cm3/: 66,0...67,0 1000H.: (63,9...69,1) 6th speed 1/min: 600 Charge press, hPa: 300 Del.quantity cm3/: 53,0...54,0 1000H.: (50,1...56,9) 1/min: 600 7th speed Charge press. hPa: -Del.quantity cm3/: 47.5...48.5 1000H.: (44.6...51.4) Zero delivery (stop): Idle delivery:

K06

Note inst. in remarks column

Test sheet : PEU 2,5 D1 Edition : 26.07.88

replaces

Calibrating oil : ISO 4113

: VE 4/ 8F2150 R316 Injection pump Type number : 0 460 484 019

Customer-specific information

Customer : PSA

Engine : XUD7TE

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Start of delivery Prestroke mm : (from BDC): -

Indicator setting: Piston stroke mm: 1.0 Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Change press. hPa: 1000 Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250 Charge press. hPa: 1000 Setting value bar: 4,7...5,3

Full-load del. with charge press.:

1/min: 1250 Speed Charge press. hPa: 1000

Deliquantity cm3/

1000H.: 45,5...46,5

cm3/ : 2,0 Dispersion 1000H : (2,5)

Full-load del. w/out charge press.:

1/min : 500 Speed

Deliquantity cm3/

1000H.: 29,5...30,5

Dispersion cm3/: 2.0 1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 350

Del.quantity cm3/

1000H.: 8,0...12,0

Dispersion cm3/: 2.01000H.: (2,5)

Residual-Delivery Setting Speed 1/min: 550

Deliquantity cm3/

1000H.: 2,0...6,0

Full-load speed regulation:

Speed 1/min: 2400 Charge press. hPa: 1000

Deliquantity cm3/

1000H: 13,0...19,0

Dispersion cm3/: 3.01000H.: (4,0)

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 44,0 mind

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750 Charge press. hPa: 1000

TD travel mm: 1.01.8	Del.quantity cm3/: 45,546,5
mm: (0,72,1) 2nd speed	1000H.: (44,749,3) 7th speed 1/min: 750
Charge press. hPa: 1000	Charge press. hPa: 250
TD travel mm: 3.03.4	Del. quantity cm3/: 36,537,5
TD travel mm: 3,03,4 mm: (2,73,7)	1000H.: (34,539,5)
3rd speed 1/min: 2000	8th speed 1/min: 500
Charge press. hPa: 1000	Charge press. hPa: 1000
TD travel mm: 6,06,8	Del.quantity cm3/: 42,544,5
mm: (5,7,0)	1000H: (41_245_8)
Supply-pump pressure characteristic:	9th speed 1/min: 500
1	Charge press. hPa: - Del.quantity cm3/: 29,530,5
1st speed 1/min: 750	1000H: (27,732,3)
Charge press. hPa: 1000	1000117 121 31 11 102 307
Supply-pump pressure bar: 3,5,4,1	Zero delivery (stop):
pressure ban: 3,5,4,1	·
2nd speed 1/min: 1250	* 16
Charge press. hPa: 1000 ; Supply-pump ;	Idle delivery:
pressure bar: 4.75,3	1st speed 1/min: 350
3rd speed 1/min: 2000	Del.quantity cm3/: 8,012,0
Charge press. hPa: 1000	1000Η.: (6,014,0)
Supply-pump !	
pressure bar: 6,36,9	High Idle:
Overflow quantity at overflow valve:	Speed 1/min: 450
	Del.quantity cm3/: 8,012,0
1st speed 1/min: 500	1000H.: (6,014,0)
Oveflow : 4183	
quantity cm3/10s: (2698) 2nd speed	Residual:
0verflow : 55138	Speed 1/min: 550
quantity cm3/10s: (40,153)	Del.quantity : 2,06,0
	1000H.: (0,08,0)
Delivery-quant. and breakaway char.:	
1st seed 1/-in, 750	Automatic starting fuel delivery:
1st speed 1/min: 750	1et energy 1/min 250
Charge-air pressure-setting	1st speed 1/min: 250
Del.quantity cm3/: 36,537,5	Del.quantity cm3/: - ind. 1000H: 45,0
1000H.: (34,539,5)	10001, 45,0
2nd speed 1/min: 2500	2nd speed 1/min: 350
Charge press. hPa: 1000	Del.quantity cm3/: -
Del.quantity cm3/: 0,06,0	max. 1000H : 45,0
1000H.: - 3rd speed 1/min: 2400	Chutoff alactromanat:
Charge press. hPa: 1000	Shutoff electromagnet:
Del.quantity cm3/: 13,019,0	Cut-in
1000H.: (12,020,0)	min. voltage : 10,0
4th speed 1/min: 2300	Rated voltage : 12,0
Charge press. hPa: 1000	
Deliquantity cm3/: 26.032.0	Mounting and assembly dimensions:
1000H.: (25,033,0) 5th speed 1/min: 2150	Decimation
Charge press. hPa: 1000	Designation K mm : 3,23,4
Del. quantity cm3/: 44,046,0	KF mm : 5,25,4 KF mm : 5,15,5
1000H.: (43,748,3)	MS mm : 1,21,6
6th speed 1/min: 1250	SVS max. mm : -
Charge press, hPa; 1000	

orrection at adjusting nut	(46)	I 	
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Note inst. in remarks column

: VWW 1,6 V9 Test sheet Edition : 02.08.88 : 03.11.87 replaces Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R138

: 0 460 494 131 Type number

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

bar: 147...150 pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Setting value mm: 2,9...3,3

Supply-pump pressure:

1/min: 1500 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 31,5...32,5

cm3/: 2,5 1000H.: (3,0) Dispersion

Low-idle speed regulation:

Speed 1/min: 475

Deliquentity cm3/

1000H.: 6,0...10,0

cm3/: 2,0 Dispersion 1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2600

Deliquantity cm3/

1000H: 12,0...16,0

Start:

1/min: 100 Speed Del.quantity mind cm3/1000H.: 35,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000

mm: 1,3...2,1 mm: (1,0...2,4) TD travel

1/min: 1500 2nd speed

TD travel mm: 2,9...3,3 mm: (2,4...3,8)

3rd speed 1/min: 2400

mm: 6,1...6,9 mm: (5,8...7,2) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump

pressure bar: 2,2...2,8

1/min: 1500 2nd speed

Supply-pump

bar: 4,3...4,9 pressure 1/min: 2400 3rd speed

Supply-pump

bar: 6,4...7,0 pressure

Overflow quantity at overflow valve:

1st speed 1/min: 600 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2400

Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2800 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 2600 Del.quantity cm3/: 12,0...16,0 1000H.: (10,0...18,0) 3rd speed 1/min: 2525 To speed 1/min: 2525

Del.quantity cm3/: 18,5...28,5

1000H.: (17,5...29,5)

4th speed 1/min: 2400

Del.quantity cm3/: 27,0...29,0

1000H.: (25,8...30,2)

5th speed 1/min: 1500

Del.quantity cm3/: 31,5...32,5

1000H.: (29,8...34,2)

6th speed 1/min: 600 1/min: 600 6th speed Del.quantity cm3/: 21,0...24,0 1000H.: (19,5...25,5) Zero delivery (stop): Electr. shutoff: Speed 1/min: 475 ELAB volt: -Del.quantity cm3/: 0,0...3,0 max. 1000H.: -Idle delivery: 1st speed 1/min: 475 Del.quantity cm3/: 6.0...10.0 1000H.: (4.0...12.0) 2nd speed 1/min: 650 Del.quantity cm3/: 0,0...7,6 1000H.: -1/min: 1200 3rd speed Del.quantity cm3/: 0,0...5,0 1000H.: -Automatic starting fuel delivery: 1/min: 400 1st speed Deliquantity cm3/: ind. 1000H: 18,0 2nd speed 1/min: 500 Deliquantity cm3/: -1000H : 23,5 max. Shutoff electromagnet:

Cut-in

K11

min, voltage

0ر10 :

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,1...3,5 KF mm : 5,6...6,0 MS mm : 1,2...1,6 SVS max. mm : 2,3

Note inst. in remarks column

Test sheet : VWW 1,6 W2 Edition : 02.08.88 replaces : 03.11.87 Calibrating oil : ISO 4113

: VE 4/ 9F2400 R138-1 Injection pump

Type number : 0 460 494 140

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter x Wall thickness : 2 mm: 840 x Length

Start of delivery Prestroke mm : -(from BDC); -

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Setting value mm: 2,9...3,3

Supply-pump pressure:

1/min: 1500 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 2400

Deliquantity cm3/

1000H.: 27,0...29,0

cm3/: 2,5 Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 450

Del.quantity cm3/ 1000H.: 6,0...10,0

cm3/: 2,0 Dispersion

1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2600

Deliquantity cm3/

1000H: 12,0...16,0

Start:

Speed 1/min: 100

Deliquantity

mind cm3/1000H.: 35_0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000

TD travel mm: 1,3...2,1

mm: (1,0...2,4)

1/min: 1500 2nd speed TD travel

mm: 2,9...3,3 mm: (2,4...3,8)

1/min: 2400 3rd speed

TD travel

mm: 6,1...6,9 mm: (5,8...7,2)

Supply-pump pressure characteristic:

1/min: 600 1st speed

Supply-pump

bar: 2,2...2,8 pressure 2nd speed 1/min: 1500

Supply-pump

pressure bar: 4,3...4,9

1/min: 2400 3rd speed

Supply-pump

pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1/min: 600 1st speed

Oveflow : 41...83

cm3/10s: (26...98) quantity

2nd speed 1/min: 2400

Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2800 Del.quantity cm3/: 0,0...3,0 1000H.: -2nd speed 1/min: 2600 Del.quantity cm3/: 12.0...16.0 1000H.: (10.0...18.0) 3rd speed 1/min: 2525 Del.quantity cm3/: 18,5...28,5 1000H.: (17,5...29,5) 1/min: 2400 4th speed Del.quantity cm3/: 27.0...29.0 1000H.: (25.8...30.2) 1/min: 1500 5th speed Del.quantity cm3/: 31,5...32,5 1000H.: (29,8...34,2) 6th speed 1/min: 600 Del.quantity cm3/: 21,0...24,0 1000H.: (19,5...25,5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 2400 Del.quantity cm3/: 0..3 1000H.: -Electr. shutoff: Speed 1/min: 450 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 450 1st speed Del.quantity cm3/: 6,0...10,0 1000H.: (4,0...12,0) 2nd speed 1/min: 650 Del.quantity cm3/: 0,0...5,0 1000H .: -1/min: 1200 3rd speed Del.quantity cm3/: 0,0...7,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 400 Del.quantity cm3/: ind. 1000H: 18,0 2nd speed 1/min: 500 Del.quantity cm3/: - max, 1000H : 23,5

K13

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3.1...3.5 KF mm : 5.6...6.0 MS mm : 1.2...1.6 SVS max. mm : 1.8

Note inst. in remarks column

Test sheet : VMA 2,0F Edition : 03.08.88 replaces : 10.85 Calibrating oil : ISO 4113

: VE 4/ 9F2150 L202 : 0 460 494 167 Injection pump Type number

Customer-specific information

Customer

Engine : HR 488 HJ

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: : 840

Start of delivery

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Change press. hPa: 800 Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500 Change press. hPa: 800

Setting value bar: 4,5...5,1

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 800

1000H : (3,0)

Full-load del. w/out charge press.:

1/min : 750 Del.quantity cm3/

1000H.: 39,5...40,5

Low-idle speed regulation:

Speed 1/min: 400 Del.quantity cm3/ 1000H.: 11,0...15,0

1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2420 Charge press. hPa: 800

Del.quantity cm3/

1000H: 12,0...18,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 36,0 mind

Load-dependent start of delivery:

1/min: 1500 Speed

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000 Charge press. hPa: 800

TD travel mm: 1,3...2,1 mm: (1,0...2,4)

1/min: 1500

2nd speed Charge press. hPa: 800

mm: 4.3...4.7 mm: (3.8...5,2) TD travel

3rd speed 1/min: 2150 Charge press. hPa: 800

TD travel mm: 7,6...8,4 mm: (7,3...8,7)

K14

	21
Supply-pump pressure characteristic:	Charge press. hPa: 400 Del.quantity cm3/: 41,543,5
1st speed 1/min: 750	1000H.: (40,045,0)
Charge press. hPa: 800	8th speed 1/min: 750 Del.quantity cm3/: 39,540,5 1000H: (37,542,5)
Supply-pump	1000H (27 5 /2 5)
pressure bar: 2,02,6	الريم، در الله ١٥٥٨٠ الم
2nd speed 1/min: 1000	Zero delivery (ctoo):
Charge press. hPa: 800	Zeno deliveny (stop):
Supply-pump	
pressure bar: 2,83,4	Electr. shutoff:
3rd speed 1/min: 1500	Eccu : Shatorr.
Charge press. hPa: 800	Speed 1/min: 400
Supply-pump	ELAB volt: -
pressure bar: 4.55.1	Del.quantity cm3/: 0,03,0
pressure bar: 4.55.1 4th speed 1/min: 2150	max. 1000H.: -
Charge press. hPa: 800	100011
Supp Ty-pump	Idle delivery:
pressure bar: 6,77,3	
	1st speed 1/min: 400
Overflow quantity at overflow valve:	Del.quantity cm3/: 11,015,0
	1000H.: (8,018,0)
1st speed 1/min: 750	2nd speed 1/min: 500
Change press. hPa: 800	Del.quantity cm3/: 2,08,0
0veflow : 4183	1000H.: (0,010,0)
quantity cm3/10s: (2698)	3rd speed 1/min: 700
2nd speed 1/min: 2150	Del.quantity cm3/: 0,04,0
Charge press. hPa: 800	1000H.: (0,04,0)
Overflow : 55138	
quantity cm3/10s: (40153)	Automatic starting fuel delivery:
Patrices and the second	
Delivery-quant. and breakaway char.:	1st speed 1/min: 400
1st sound 1/55 750	Del.quantity cm3/: -
1st speed 1/min: 750	ind. 1000H: 37,0
Charge-air pressure-setting point hPa: 400	2nd aread 47 to 500
point hPa: 400 LDA stroke mm: 5,7	2nd speed 1/min: 500
Del. quantity cm3/: 41,543,5	Del.quantity cm3/: -
1000H.: (40,045,0)	max. 1000H : 45,0
2nd speed 1/min: 2550	Shutoff electromagnet:
Charge press. hPa: 800	ondcorr elect domagnet.
Del.quantity cm3/: 0,02,0	Cut-in
1000H.: -	min. voltage : 10,0
3rd speed 1/min: 2420	Rated voltage : 12,0
Charge press. hPa: 800	, ,
Del.quantity cm3/: 12,018,0	Mounting and assembly dimensions:
1000H.: (11,019,0)	,
4th speed 1/min: 2150	Designation
Charge press. hPa: 800	K mm : 3,23,4
Deliquentity cm3/: 42,345,3	KF mm : 5,35,7
1000H.: (41,646,0)	0ر16ر mm : 0ر16
5th speed 1/min: 1500	SVS max, mm : 1,7
Charge press. hPa: 800	XK mm : 17,019,0
Del. quantity cm3/: 52,553,5	XL mm: 8,812,2
1000H.: (51,055,0)	_
6th speed 1/min: 750	Remarks:
Charge press, hPa: 800	
Del. quantity cm3/: 51,554,5	Correction at adjusting nut (46)
1000H.: - 1 7th speed 1/min: 750	
7 or appeal 17 mm, 130	

Note inst. in remarks column

: VWN 1,6 X2 Test sheet Edition : 02.08.88 replaces : 17.07.87 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R211 : 0 460 494 172 Type number

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer: 40...48 : 42...50 electronically

Inlet press., bar : 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min; 1000 Charge press. hPa: 750 Setting value mm: 1,8...2,6

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

1/min: 1500 Speed Charge press. hPa: 750

Del.quantity cm3/ 1000H.: 42,0...43,0 Dispersion cm3/: 2,5 1000H : (3,0)

Full-load del. w/out charge press.:

1/min : 700 Deliquantity cm3/

1000H.: 26,0...27,0

Low-idle speed regulation:

Speed 1/min: 425 Del.quantity cm3/

1000H.: 9,0...11,0

cm3/: 2,5 Dispersion 1000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/

1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525 Charge press. hPa: 750 Deliquantity cm3/

1000H: 10,0...14,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 35,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed Charge press. hPa: 750

TD travel mm: 1,8...2,6 mm: (1, 5, ..., 2, 9)

1/min: 1500

2nd speed Charge press. hPa: 750 mm: 3,8...4,2 mm: (3,3...4,7) TD travel

1/min: 1800

3rd speed Charge press. hPa: 750

mm: 4,8...5,6 mm: (4,5...5,9) 1/min: 2250 TD travel Charge press. hPa: 300 Det.quantity cm3/: 32,5...33,5 1000H.: (30,0...36,0) 1/min: 700 4th speed Charge press. hPa: 750 8th speed mm: 6,1...6,9 mm: (5,8...7,2) Charge press. hPa: 750 Del.quantity cm3/: 34,5...37,5 1000H: (33,0...39,0) TD travel Supply-pump pressure characteristic: 1/min: 700° 9th speed Charge press. hPa: -Del.quantity cm3/: 26,0...27,0 1/min: 700 1st speed Charge press. hPa: 750 1000H: (23,5...29,5) Supply-pump 10th speed 1/min: 600 bar: 3,3...3,9 1/min: 1500 pressure Charge press. hPa: -2nd speed Del.quantity cm3/: 24,5...29,5 Charge press. hPa: 750 1000H: (22,0...32,0) Supply-pump bar: 5,6...6,2 1/min: 2250 pressure Zero delivery (stop): 3rd speed Charge press. hPa: 750 Supply-pump Electr. shutoff: bar: 7.7...8.3 pressure 1/min: 425 Speed Overflow quantity at overflow valve: ELAB volt: -Del.quantity cm3/: 0,0...3,0 1st speed 1/min: 700 1000H.: max. Oveflow : 41...83 quantity cm3/10s: (26...98) Idle delivery: 1/min: 2250 2nd speed : 55...138 Overflow 1st speed 1/min: 425 Del.quantity cm3/: 9.0...11.0 quantity cm3/10s: (40...153) 1000H.: (4,5...15,5) Delivery-quant. and breakaway char.: 2nd speed 1/min: 400 Del.quantity cm3/: 13.0..17.0 1000H.: (9,5...20,5) 1st speed 1/min: 900 Charge-air pressure-setting hPa: 300 point High Idle: LDA stroke mm: 4,5 Del.quantity cm3/: 32,5...33,5 1000H.: (30,0...36,0) Speed 1/min: 525 Del.quantity cm3/: 7,0...9,0 1/min: 2650 2nd speed 1000H.: (3,0...13,0) Charge press. hPa: 750 Del.quantity cm3/: 0,0...6,0 1000H.: -Residual: 1/min: 2525 3rd speed 1/min: 550 Speed Charge press. hPa: 750 . 2,0...3,0 Del.quantity Del.quantity cm3/: 10,0...14,0 1000H.: (0,0...5,5) 1000H.: (8,0...16,0)
4th speed 1/min: 2425
Charge press. hPa: 750
Del.quantity cm3/: 23,5...33,5
1000H.: (22,5...34,5) Automatic starting fuel delivery: 1st speed 1/min: 150 Del.quantity cm3/: -5th speed 1/min: 2250 1000H: 35,0 ind. Charge press. hPa: 750 Del.quantity cm3/: 36,3...38,3 1/min: 350 2nd speed 1000H.: (35,1...39,5) Del.quantity cm3/: -1/min: 1500 6th speed 1000H : 40,0 max. Charge press. hPa: 750 Del.quantity cm3/: 42,0...43,0 Shutoff electromagnet: 1000H.: (40,3...44,7) 1/min: 900 7th speed

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation K KF MS mm : K1

K mm : K1
KF mm : MS mm : 1,1...1,5
SVS max. mm : 3,1

Note inst. in remarks column

Test sheet : VWW 1,6W17 Edition : 03.08.88 replaces : 08.12.86

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R221 Type number : 0 460 494 179

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery Prestroke min : -(from BDC): -

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250

K20

Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 31.5...32,5 cm3/: 2,5

Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/

1000H.: 11,0...13,0

Dispersion cm3/: 2.01000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/

1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600

Deliquantity cm3/

1000H: 12_0...16_0

Start:

Speed 1/min: 100

Del.quantity

cm3/1000H.: 35,0 mind

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000

TD travel mm: 1,0...1,8

mm: (0,7...2.1)2nd speed 1/min: 1250

TD travel

mm: 2,1...2,5 mm: (1,6...3,0)

1/min: 1800 3rd speed TD travel

mm: 4,2...5,0 mm: (3,9...5,3)

4th speed 1/min: 2400

TD travel 9ء6...1ء mm:

mm: (5,8...7₂)

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump bar: 2,1...2,7 1/min: 1250 pressure 2nd speed Supply-pump bar: 4,0...4,6 pressure 3rd speed 1/min: 2400 Supply-pump pressure bar: 7,3...7,9 Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2400 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2800 1st speed Del.quantity cm3/: 0,0...4,0 1000H.: -2nd speed 1/min: 2600 Del.quantity cm3/: 12,0...16,0 1000H.: (10,0...18,0) 1/min: 2500 3rd speed Del.quantity cm3/: 19.0...29.0 1000H.: (18.0...30.0) 4th speed i/min: 2400 Del.quantity cm3/: 27.0...29.0 1000H.: (25.8...30.2) 5th speed 1/min: 1500 1/min: 1500 5th speed Del.quantity cm3/: 31,5...32,5 1000H.: (29,8...34,2) 1/min: 600 6th speed Del.quantity cm3/: 21,0...24,0 1000H.: (19,5...25,5) Zero delivery (stop): Electr. shutoff: 1/min: 425 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: 11,0..13,0 1000H.: (8,0...16,0) High Idle: Speed 1/min: 525 Del.quantity cm3/: 7,0...9,0 1000H.: (4,0...12,0)

Residual:

Speed 1/min: 550
Del.quantity : 2,5...4,5
1000H.: (1,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 180 Del.quantity cm3/: ind. 1000H: 35,0

2nd speed 1/min: 380 Del.quantity cm3/: - max. 1000H : 30,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 1,2...1,6
XK mm : 17,0...19,0
XL mm : 9,8...13,2

Note inst. in remarks column

Test sheet : VWW 1,6W15 Edition : 02.08.88 replaces : 27.10.87 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R224 Type number : 0 460 494 185

Customer-specific information

Customer : VW

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar: 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm : -(from BDC): -

Indicator setting:

Piston stroke mm: 1.0 Outlet ; A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250

K22

Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 31,5...32,5 cm3/: 2,5

Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 11,0...13,0 Dispersion cm3/: 2,0 1000H.: (3.0)

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/

1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600

Del.quantity cm3/

1000H: 12,0...16,0

Start:

Speed 1/min: 100

Del.quantity cm3/1000H.: 35.0 mind '

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed

TD travel mm: 1,0...1,8

mm: (0,7...2,1)

2nd speed 1/min: 1250 TD travel mm: 2,1...2,5

mm: (1,6...3,0)

3rd speed 1/min: 1800

TD travel mm: 4,2...5₀0

mm: (3,9...5,3)

4th speed 1/min: 2400

mm: 6,1...6,9 mm: (5,8...7,2) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump bar: 2,1...2,7 pressure 1/min: 1250 2nd speed Supply-pump pressure bar: 4,0...4,6 3rd speed 1/min: 2400 Supply-pump bar: 7,3...7,9 pressure Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 cm3/10s: (26...98) quantity | 2nd speed 1/min: 2400 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2800 Del.quantity cm3/: 0,0...4,0 1000H.: -2nd speed 1/min: 2600 Del.quantity cm3/: 12,0...16,0 1000H.: (10,0...18,0) 1/min: 2500 3rd speed Del.quantity cm3/: 19,0...29,0 1000H.: (18,0...30,0) 1/min: 2400 4th speed Del.quantity cm3/: 27.0...29.0 1000H.: (25.8...30.2) 5th speed 1/min: 1500 Del.quantity cm3/: 31,5...32,5 1000H.: (29,8...34,2) 1/min: 600 6th speed Del.quantity cm3/: 21,0...24,0 1000H.: (19,5...25,5) Zero delivery (stop): Electr. shutoff: Speed 1/min: 425 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1st speed 1/min: 375 1000H.: (8,0...16,0)

Residual: Speed 1/min: 550 Del.quantity 5,3,3,5 : 1000H.: (1,0...5,0) Automatic starting fuel delivery: 1st speed 1/min: 180 Del.quantity cm3/: -1000H: 35,0 ind. 2nd speed 1/min: 380 Del.quantity cm3/: - max. 1000H: 30,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation : 3,2...3,4 Κ KF mm MS 6ر1...2ر1: mm mm : 3,4 mm : 17,0...19,0 SVS max. XK XL mm : 9,8...13,2 Remarks:

Del.quantity cm3/: 11,0..13,0

High Idle:

1/min: 525 Deliquantity cm3/: 7,0...9,0 1000H.: (4,0...12,0)

Note inst. in remarks column

Test sheet : FIA 1,7P2 Edition : 03.08.88 replaces : 18.12.86

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R256 : 0 460 494 204 Type number

Customer-specific information Customer : FIAT-AUTO

Engine : x8/34

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Start of delivery Prestroke mm : -(from BDC); -

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500 Setting value bar: 5,3...5,9

Full-load del. W/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/

1000H.: 29.5...30.5 cm3/: 2.5

Dispersion 1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 390 Del.quantity cm3/

1000H.: 10,0...14,0

cm3/: 2,5 Dispersion 1000H.: (2.5)

Full-load speed regulation:

Speed 1/min: 2450

Del.quantity cm3/

1000H: 19,0...25,0

Start:

Speed 1/min: 100 Del.quantity

mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

TD travel mm: 1,2...2,0 mm: (0,9...2,3)

1/min: 1500 2nd speed

TD travel

mm: 4,3...4,7 mm: (3,8...5,2)

3rd speed

1/min: 2300 mm: 7_4...8_2 mm: (7_1...8_5) TD travel

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump

bar: 3,1...3,7 pressure 1/min: 1500 2nd speed

Supply-pump

pressure

bar: 5,3...5,9 bar: (5,1...6,1) 1/min: 2300

3rd speed

K24

Supply-pump pressure bar: 7,1...7,7 Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 2300 : 55...138 2nd speed Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del.quantity cm3/: 0,0...1,6 1000H.: -2nd speed 1/min: 2650 Del.quantity cm3/: 1.5...8.5 1000H.: (0,0...10,0) 3rd speed 1/min: 2450 Del.quantity cm3/: 19,0...25,0 1000H.: (18.0...26.0) 1/min: 2300 4th speed Del.quantity cm3/: 30,8...33,2 1000H.: (29,7...34,3) 5th speed 1/min: 1500 Del.quantity_cm3/: 29,5...30,5 1000H.: (27,3...32,3)

6th speed 1/min: 1000

Del.quantity cm3/: 29,6...32,0 1000H.: (28,5...33,1)

7th speed 1/min: 600
Del.quantity cm3/: 30,5...33,5
1000H.: (29,0...35,0)

Zero delivery (stop):

Electr. shutoff:

Idle delivery:

Automatic starting fuel delivery:

1st speed 1/min: 300 Del.quantity cm3/: ind. 1000H: 48.0

2nd speed 1/min: 400 Del.quantity cm3/: max. 1000H: 45_0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K : 3,2...3,4 महत : 5,6...6,0 KF iten. MS men : 1,6...2,0 : 4,7 : 17,0...19,0 SVS max. mm XΚ mi mm : 9,8...13,2 XL

Note inst. in remarks column

Test sheet : PEU 1,9 G Edition : 03.08.88 replaces : 16.12.86 Calibrating oil : ISO 4113

: VE 4/ 9F2300 R272 Injection pump : 0 460 494 211 Type number

Customer-specific information

Customer : PSA

Engine : XUD 9A

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening.

pressure bar : 0,35

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Start of delivery Prestroke nyn : -(from BDC): -

Indicator setting:

Piston stroke mm: 0.3 Outlet ; A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250

K26

Setting value bar: 3.9...4.5

Full-load del. w/out charge press.:

Speed 1/min : 1250

Del.quantity cm3/

1000H.: 30,3...31,3 cm3/: 2,5

Dispersion 1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375

Del.quantity cm3/ 1000H.: 8,0...10,0 Dispersion cm3/: 3,0 1000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 550

Del.quantity cm3/

1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 19,0...25,0

Start:

1/min: 100 Speed Del quantity cm3/1000H.: 45,0 mind

1/min: 1250 Speed

Inspection-pump test specifications Test specifications in parentheses

Load-dependent start of delivery:

Timing-device characteristic:

1st speed 1/min: 800

TD travel mm: 0,6...1,4

mm: (0,3...1.7)

1/min: 1250 2nd speed

mm: 3,0...3,4 TD travel

mm: (2,5...3,9)

1/min: 2000 3rd speed

TD travel mm: 6,7...7,5 mm: (6,4...7,8)

Supply-pump pressure characteristic:

1/min: 800 1st speed

Supply-pump

bar: 2,6...3,2 pressure

2nd speed 1/min: 1250

Supply-pump bar: 3,9...4,5 pressure 3rd speed 1/min: 2000 Supply-pump bar: 5,9...6,5 pressure Overflow quantity at overflow valve: 1st speed 1/min: 800 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2300 Overflow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2650 Del.quantity cm3/: 0,0...10,0 1000H.: -1/min: 2500 2nd speed Del.quantity cm3/: 19.0...25.0 1000H.: (18.0...26.0) 3rd speed 1/min: 2250 Del.quantity cm3/: 32,3...35,3 1000H.: (31,6...36,0) 4th speed 1/min: 1250 Del.quantity cm3/: 30,3...31,3 1000H.: (28,6...33,0) 1/min: 800 5th speed Del.quantity cm3/: 31.3...34.3 1000H.: (29.8...35.8) 6th speed 1/min: 500
Del.quantity cm3/: 31,3...34,3
1000H.: (29,8...35,8) Zero delivery (stop): Mech. shutoff: Speed 1/min: 2300 1000H.: -Idle delivery:

Deliquantity cm3/: -

1st speed 1/min: 375 Del.quantity_cm3/: 8,0...10,0 1000H.: (5,0...13,0)

High Idle:

Speed 1/min: 470 Del.quantity cm3/: 8.0...10.0 1000H.: (5,0...13,0)

Residual:

Speed 1/min: 550

2,5...3,5 1000H.: (0,0...7,0) Del.quantity

Automatic starting fuel delivery:

1/min: 200 1st speed Deliquentity cm3/: ind. 1000H: 40,0

2nd speed 1/min: 300 Del.quantity cm3/: -1000H : 35,0

Shutoff electromagnet:

Cut-in

: 10,0 min. voltage Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

: 3,2...3,4 : 5,3...5,7 K KF MS : 1,2...1,6 mm SVS max. **TOST**

Note inst. in remarks column

Test sheet : FIA 1,3C Edition : 26.07.88

replaces

Calibrating oil : ISO 4113

: VE 4/ 9F2100 R303 Injection pump

Type number : 0 460 494 225

Customer-specific information Customer : FIAT-AUTO

Engine : x8/45\$

Power k: 66

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42..,50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

bar : 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length

Start of delivery

Indicator setting: Piston stroke mm: 1.0

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 5,5...5,9 KSB solenoid-operated valve volt: 12.0

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 5,3...5,9

KSB solenoid-operated valve volt: 12.0

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000

Del.quantity cm3/ 1000H.: 52,0...53,0

KSB solenoid-operated valve volt: 12,0 cm3/: 2,5 Dispersion 1000H : (2,5)

Full-load del. w/out charge press.:

Speed $1/\min : 600$ Del.quantity cm3/

∜000H.: 40,0...41,0

KSB solenoid-operated valve volt: 12.0

Low-idle speed regulation:

Speed 1/min: 400

Deliquantity cm3/ 1000H.: 11,0...15,0

KSB solenoid-operated valve volt: 12,0 cm3/: 2,5 Dispersion 1000H.: (2,5)

Residual-Delivery Setting 1/min: 700

Del.quantity cm3/

1000H.: 4,0...6,0

KSB-Solenoid-Operated valve Voit : 12,0

Full-load speed regulation:

1/min: 2300 Speed Charge press. hPa: 1000

Deliquantity cm3/

1000H: 30,0...36,0

KSB solenoid-operated valve volt: 12,0

Start:

1/min: 100 Speed Del.quantity cm3/1000H.: 55,0 KSB solenoid-operated volt: 12,0

Load-dependent start of delivery: KSB solenoid-operated valve volt: 12.0 Speed 1/min: 1500 Overflow quantity at overflow valve: Inspection-pump test specifications Test specifications in parentheses 1st speed 1/min: 800 Charge press. hPa: 1000 KSB solenoid-operated Timing-device characteristic: volt: 12,0 valve Oveflow : 41...83 1/min: 500 1st speed quantity cm3/10s: (26...98) 2nd speed 1/min: 2100 Charge press. hPa: 1000 TD travel mm: 3,2...4,8 Charge press. hPa: 1000 mn: (2,5...5,5)KSB solenoid-operated KSB solenoid-operated volt: 12,0 : 55...138 valve valve volt: Overflow | 2nd speed 1/min: 1000 quantity cm3/10s: (40...153) Charge press. hPa: 1000 mm: 2,5...5,5 TD travel Delivery-quant. and breakaway char.: mm: KSB solenoid-operated 1st speed 1/min: 800 valve volt: -Charge-air pressure-setting 3rd speed 1/min: 800 point hPa: 400 Charge press. hPa: 1000 KSB solenoid-operated mm: 1,8,..2,6 TD travel valve volt: 12,0 Del.quantity cm3/: 43,5...44,5 1000H.: (41,5...46,5) 2nd speed 1/min: 2650 mm: (1,5...2,9)KSB solenoid-operated valve volt: 12,0 4th speed 1/min: 1500 4th speed 1/min. 1200 Charge press. hPa: 1000 TD travel mm: 5.5...5,9 mm: (5,2...6,2) Charge press. hPa: 1000 KSB solunoid-operated valve volt: 12,0 Del.quantity cm3/: 0,0...7,0 1000H.: -KSB solenoid-operated valve volt: 12,0 3rd speed 1/min: 2450 1/min: 2100 5th speed Charge press. hPa: 1000 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0
Del.quantity cm3/: 12,0...20,0
1000H.: (11,0...21,0)
4th speed 1/min: 2300 TD travel mm: 8,2...9,0 mm: (5,9...9,3)KSB solenoid-operated valve volt: 12,0 Charge press. hPa: 1000 Supply-pump pressure characteristic: KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 30,0...36,0 1st speed 1/min: 800 1000H.: (29,0...37,0) 1/min: 2100 Charge press. hPa: 1000 Supply-pump 5th speed pressure bar: 3,2...3,8 Charge press. hPa: 1000 KSB solenoid-operated KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 50,5...53,5 valve volt: 12,0 1/min: 1500 2nd speed 1000H.: (49,5...54,5) 1/min: 1500 Charge press. hPa: 1000 Supply-pump 6th speed pressure bar: 5 KSB solenoid-operated bar: 5,3...5,9 Charge press. hPa: 1000 KSB solenoid-operated valve volt: 12,0 valve volt: 12,0 Del.quantity cm3/: 52.0...53.0 1000H.: (50.5...54.5) 3rd speed 1/min: 2100 Charge press. hPa: 1000 Supply-pump 7th speed 1/min: 800 bar: 7,0...7,6 pressure Charge press. hPa: 1000

KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: 55,5...58,5 1000H.: -1/min: 800 8th speed Charge press. hPa: 400 KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 43.5...44.5 1000H: (41.5...46.5) 1/min: 800 9th speed Charge press. hPa: -KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 37.0...39.0 1000H: (35.5...40.5) 1/min: 600 10th speed Charge press. hPa: -KSB solenoid-operated valve volt: 12.0 Del.quantity cm3/: 40.0...41.0 1000H: (38.0...43.0) Zero delivery (stop): Electr. shutoff: Speed 1/min: 400 ELAB volt: -Del.quantity cm3/: 0,0...3,0 10004.: max. Idle delivery: 1st speed 1/min: 400 KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 11,0..15,0 1000H.: (9,5...16,5) Residual: Speed 1/min: 700 Del.quantity : 4,0...6,0 1000H.: (3,0...7,0) KSB-Solenoid-operated valve Volt: 12,0 Automatic starting fuel delivery: 1st speed 1/min: 220 KSB solenoid-operated valve volt: 12,0 Del.quantity cm3/: ind. 1000H: 57,0 2nd speed 1/min: 300 KSB solenoid-operated

volt: 12,0

valve

L02

Del.quantity cm3/: - max. 1000H: 48,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,1...3,5 KF mm : 5,6...6,0 MS mm : 1,0...1,4 XK mm : 18,8...20,8 XL mm : 10,0...13,4

Correction at adjusting nut (46)

Note inst. in remarks column

Test sheet : REN 2,0 0 Edition : 26.07.88

replaces

Calibrating oil : ISO 4113

: VE 4/ 9F2350 R309 Injection pump

Type number : 0 460 494 228

Customer-specific information

Customer : RNUR

Engine : J8S-736

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 x Length mm : 450

Start of delivery Prestroke mm : -

(from BDC): -

Indicator setting: Piston stroke mm: 1.0

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1125 Setting value mm: 2,6...3,0

Supply-pump pressure:

Speed 1/min: 1125

L03

Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

1/min : 1125 Speed

Del.quantity cm3/

1000H.: 36.5...37.5 cm3/: 2.5 1000H.: (3.0)

Dispersion

Low-idle speed regulation:

Speed 1/min: 400

Deliquantity cm3/

1000H.: 6,0...10,0

Dispersion cm3/: 2,5

1000H.: (3,0)

Residual-Delivery Setting Speed 1/min: 500

Del.quantity cm3/ 1000H.: 1,0...5,0

Full-load speed regulation:

Speed 1/min: 2500

Del.quantity cm3/

1000H: 20_0...26_0

Start:

Speed 1/min: 100

Del.quantity

cm3/1000H.: 52,0 mind '

Load-dependent start of delivery:

Speed 1/min: 1125

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

mm: 0,7...1,5 TD travel

mm: (0,4...1.8)

1/min: 1125 2nd speed

TD travel mm: 2,6...3,0

mm: (2,1...3,5)

1/min: 2000 3rd speed

TD travel mm: 6,9...7,7

mm: (6.6...8.0)

Supply-pump pressure characteristic:

1st speed 1/min: 800

Supply-pump

bar: 3,1...3,7 pressure

2nd speed 1/min: 1125

Supply-pump bar: 4,2...4,8 pressure 3rd speed 1/min: 2000 Supply-pump pressure bar: 6,5...7,1 Overflow quantity at overflow valve: 1/min: 800 1st speed Oveflow. : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 2250 Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2750 Deliquentity cm3/: 0,0...5,0 1000H.: -1/min: 2650 2nd speed Del.quantity cm3/: 2,0...10,0 1000H.: (1,0...11,0) 3rd speed 1/min: 2500 Del.quantity cm3/: 20,0...26,0 1000H.: (19,0...27,0) 4th speed 1/min: 2250 Del.quantity cm3/: 34,3...36,3 1000H.: (33,0...37,6) 1/min: 1750 5th speed Del.quantity cm3/: 34,0...36,0 1000H.: (32,7...37,3) 6th speed 1/min: 1125 Del.quantity cm3/: 36.5...37.5 1000H.: (34.7...39.3) 1/min: 800 7th speed Del.quantity cm3/: 33,5...36,5 1000H.: (32,7...37,3) Zero delivery (stop): Electr. shutoff: 1/min: 400 Speed ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: -Idle delivery: 1/min: 400 1st speed Del.quantity cm3/: 6,0...10,0 1000H.: (4,0...12,0)

Speed 1/min: 500 Del.quantity cm3/: 7,7...11,7 1000H.: (5,7...13,7)

High Idle:

L04

Residual: Speed 1/min: 500 Del.quantity : 1,0...5,0 1000H.: -Automatic starting fuel delivery: 1st speed 1/min: 210 Del.quantity cm3/: ind. 1000H: 45,0 2nd speed 1/min: 310 Del.quantity cm3/: -max. 1000H : 45,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K : 3,2...3,4 **KF** : 5,3...5,7 MS 7ر1...3ر1 : mm SVS max. mm : 17₋0...19₋0 : 8₋7...12₋1 XK mm XL LUETT Remarks:

Note inst. in remarks column

: FIA 1,9 D1 Test sheet Edition : 03.08.88 replaces : 16.12.86 Calibrating oil : ISO 4113

: VE 4/ 9F2300 L157-1 Injection pump

Type number : 0 460 494 238

Customer-specific information Customer : FIAT-AUTO

Engine : M707

TEST BENCH REQUIREMENTS

Calibrating-oil C return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter x Wall thickness : 2 mm: 450 x Length

Start of delivery

Indicator setting: Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Speed Setting value mm: 4,4...4,8

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,1...5,7 Full-load del. w/out charge press.:

Speed 1/min : 1500 Del.quantity cm3/

1000H.: 34,5...35,5 cm3/: 2,5

Dispersion 1000H.: (2,0)

Low-idle speed regulation:

Speed 1/min: 400

Del.quantity cm3/

1000H.: 9,0...13,0

Dispersion cm3/: 2.01000H.: (2,0)

Full-load speed regulation:

Speed 1/min: 2400

Deliquantity cm3/

1000H: 24,0...30,0

Start:

Speed 1/min: 100 Del.quantity cm3/1000H.: 55.0 mind

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800

mm: 0,7...1,5 TD travel mm: (0,4...1,8)

2nd speed 1/min: 1500

mm: 4,4...4,8 mm: (3,9...5,3) 1/min: 2300 TD travel

3rd speed

TD travel mm: 8,2...9,0 mm: (7,9...9,3)

Supply-pump pressure characteristic:

1st speed 1/min: 400

Supply-pump

bar: 2,5...3,1 1/min: 1500 pressure

2nd speed

Supply-pump

bar: 5,1...5,7 1/min: 2300 pressure

3rd speed

Supply-pump

pressure bar: 6,9...7,5

Overflow quantity at overflow valve: 1st speed 1/min: 600 Oveflow : 41...83 quantity cm3/10s: (26...98) 1/min: 2300 2nd speed : 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2600 1st speed cm3/: 3,0...9,0 1000H.: (1,0...11,0) Del.quantity 2nd speed 1/min: 2500 Del.quantity cm3/: 14,0...21,0) 3rd speed 1/min: 2400 Del.quantity cm3/: 24.0...30.0 1000H.: (23.0...31.0) 1/min: 2300 4th speed Del.quantity cm3/: 34.3...36.7 1000H.: (33.2...37.8) 1/min: 1500 5th speed Del.quantity cm3/: 34,5...35,5 1000H.: (32,7...37,3) 6th speed 1/min: 1000 Del.quantity cm3/: 36,3...38,9 1000H.: (35,3...39,9) 7th speed 1/min: 600 Del.quantity cm3/: 35,5...38,5 1000H.: (34,0...40,0) Zero delivery (stop): Electr. shutoff: Speed 1/min: 400 ELAB volt: -Del.quantity cm3/: 0,0...3,0 1000H.: max. Idle delivery: 1st speed 1/min: 400 cm3/: 9.0..13.0 1000H.: (7.0..15.0) Deliquentity 2nd speed 1/min: 450 cm3/: 0,5...6,5 Del.quantity 1000H.: (0,0...7,0) 3rd speed 1/min: 500 Del.quantity cm3/: 0.0...2.0 1000H.: (0.0...2.0) Automatic starting fuel delivery: 1st speed 1/min: 300 Deliquantity cm3/: ~

1000H: 50,0

ind.

L06

2nd speed 1/min: 450 Del.quantity cm3/: max. 1000H : 46,0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4 KF mm : 5,6...6,0 MS mm : 1,3...1,7 XK mm : 17,0...19,0 XL mm : 12,0...15,4

Note remarks

: MB 2.0 r4 : 04.11.88 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 074 903

Injection pump

Pump designation : PES4MS5C32ORS169 EP type number : 0 410 054 959

Governor

Governor design. : RSF360/2300M60-9 Governor no. : 0 420 021 109

Customer-spec. information

Customer : D8

Engine : 0M601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1- 3- 4- 2

Phasing

: 0-90-180-270

Tolerance + - 0

: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 335.0 Rack travel in mm : 6.8...7.0 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...33.0 1000 : (31.0...34.0) Spread cm3 : 2.50 1000 : (3.00)

RATED SPEED

ist version

Control lever

position degrees: 50...0

3rd rack travel in: 9.0...9.4 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.00 Speed Lbw

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Rack travel in mm: 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 34...38

Setting point w/out bumper spring

L07

rpm : 335 Rack travel in mm: 6.9 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) Testing: Speed rpm : 225 Rack travel in mm : 20.10...0.00 Minimum rack trave: 9.50 Speed rpm : 335 HIGH IDLE Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.50 1st version rpm : 610...710 Speed Aneroid pressure h: 1100 Speed : 1000 rpm Speed rpm : 2500 Maximum rack trave: 2.00 Rack travel in mm : 9.00...9.40 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.50 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 5,40...5,60 1000 s: (3.00) : (5,30...5,70) LOW IDLE TORQUE CONTROL Torque control curve - 1st version Speed rpm : 335 : 1000 1st speed rpm Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Rack travel in m: 12.80...12.90 2nd speed rpm : 1800 Rack travel in m: 12.20...12.40 Spread cm3 : 1.00 3rd speed rpm : 2200 1000 s: (1.50) Rack travel in m: 11.80...12.00 SETTING/TESTING ELECTRONIC IDLE Aneroid/Altitude REGULATION (ELR) Compensator Test Control lever at idle stop rpm : 360 1st version Rack travel in mm : (13,1,...14,5) Pressure hPa : 950 Del.quantity cm3/:-Rack travel mm : 0.00...0.20 1000 s: (29,0...37,0) : 1,8 Current A 1st pressure hPa : 900 Control lever at full-load stop Rack travel in m: 0.50...0.70 rpm : 2950 Speed 2nd pressure hPa : 750 Rack travel in mm : 0,00...1,00 Rack travel in m: 1.80...2.20 Current short-duration A: 3,00 FUEL DELIVERY CHARACTERISTICS Starting test Speed : 100 rpm Del.quantity cm3/: -min. 1000 s: 55,00 1st version Aneroid pressure h: 1100 : 1800 Speed rpm Remarks: Del.quantity cm3/ : 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 Start-of-delivery spacing (difference) between max/min value 1° cam angle 1000 s: (3.) Aneroid pressure h: 1100 maximum. Speed rpm : 2200 Del.quantity cm3/ : 33.5...35.5 1000 s: (32.5...36.5) Spread cm3 : 2.50 1000 s: (3.00) SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). STARTING FUEL DELIVERY Cam angle according to cyl. 1.

L₀₈

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Pin projection = 16.60...16.70 mm

Note remarks

: MB 2,0 r5 Test sheet Edition : 04.11.88 Replaces

Test oil : ISO-4113

Combination no. : 0 400 074 904

Injection pump

Pump designation : PES4MS5C32ORS169 EP type number : 0 410 054 959

Governor

Governor design. : RSF375/2300M56-6 Governer no. : 0 420 021 110

Customer-spec. information Customer : DB

Engine : 0M601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

L10

Phasing : 0-90-180-270

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

cm3 : 0.1Spread

100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version Control lever

position degrees: 50...0

3rd rack travel in: 9,00...9,40

rpm : 2500 Speed 4th rack travel in: 2950

Speed : 0.00...1.00 rpm

SET IDLE CONTROL LEVER POSITION

rpm : 1000 Rack travel in mm: 1,9...2,0

LOW IDLE 1 Control lever

position degrees: 34...38 Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm: 7.0 Testing: Speed rpm Minimum rack trave: 11.50 rpm : 375 Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.50 rpm : 640...740 Speed rpm : 1000 Speed Maximum rack trave: 2.00 SET IDLE AUXILIARY SPRING Speed rpm : 400 Rack travel in mm : 5,80...6,00 : (5,70...6,10) TORQUE CONTROL Rack travel in m: 12.80...12.90
2nd speed rpm : 1800
Rack travel in m: 12.20...12.40 3rd speed rpm : 2200 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version hPa : 950 Pressure Rack travel mm : 0.00...0.20 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 : 1800 rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Spread cm3 : 2.50 1000 s; (3.) Aneroid pressure h: 1100 Speed : 2200 rpm Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) Spread cm3 : 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 9.00...9.40 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) cm3 : 2.50Spread 1000 s: (3.00) LOW IDLE Speed rpm : 375
Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) cm3 : 1.00 Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed rpm : 425
Rack travel in mm : (8,3...9,9) Del.quantity cm3/: -1000 s: (11,0...19,0) hPa : 400 Vacuum Remarks: : SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction

allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 2,5 H : 15.11.88 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 400 075 948 Injection pump Pump designation : PES5M55C32ORS173 EP type number : 0 410 055 976 Governor Governor design. : RSF350/2300M71-1 Governer no. : 0 420 021 118 Customer-spec. information Customer : DB Engine : OM602-Abgast. 1st version kW : 64.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 469 990 351 Inlet press., bar : 1.00 Test nozzle holder : 0 681 343 009 assembly pressure, bar : 172...175 : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Opening Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm BEGINNING OF DELIVERY Test pressure, bar: 30...32 Prestroke mm : 1.70...1.80 : (1.65...1.85) Rack travel in mm : 20.00...22.00 firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288 Tolerance + - 0 : 0.00 (1.00) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 1000 Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 3.1...3.2 100 s: (3.0...3.3) Spread cm3 : 0.2100 s: (0.3) 2nd speed rpm : 350 Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9) cm3 : 0.1 Spread 100 s: (0.1) FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1100 Del.quantity : 31.5...32.5 1000 : (30.5...33.5) Spread cm3 : 2.50 1000 : (3.00) RATED SPEED 1st version Control lever position degrees: 50...0 3rd rack travel in: 9,20...9,60 Speed rpm : 2500 4th rack travel in: 2950 rpm : 0.00...1.00 Speed SET IDLE CONTROL LEVER POSITION rpm : 1000 Rack travel in mm: 1,9...2,0 LOW IDLE 1 Control lever position degrees: 13...17 Setting point w/out bumper spring

rpm : 350 Spread cm3 : 2.50Rack travel in mm: 6.5 1000 s: (3.00) Testing: Speed rpm : 220 STARTING FUEL DELIVERY Minimum rack trave: 10.00 Speed rpm : 350 Rack travel in mm : 6.40...6.60 rpm : 100 Rack travel in mm : 2.50 Del.quantity cm3/: 52.0...0.0 Speed rpm : 600...700 1000 s: (52.0...0.0) rpm : 1000 Speed Rack travel in mm : 20.10...0.00 Maximum rack trave: 2.00 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 400 1st version Rack travel in mm : 5,20...5,40 : (5,10...5,50) Aneroid pressure h: 1100 rpm : 2500 Rack travel in mm : 9.20...9.60 Del.quantity cm3/ : 22.0...26.0 TORQUE CONTROL Torque control curve - 1st version 1000 s: (21.0...27.0) 1st speed rpm : 1000 cm3 : 2.50 Spread Rack travel in m: 12.40...12.50 1000 s: (3.00) 2nd speed rpm : 1800 Rack travel in m: 11.80...12.00 LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 11.50...11.70 Speed rpm : 350 Rack travel in mm : 6.40...6.60 Aneroid/Altitude Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Compensator Test cm3 : 1.00 Spread 1000 s: (1.50) 1st version Setting SETTING PNUEUMATIC FAST IDLE Speed : 1000 rpm (ELA) Pressure hPa : 950 : 0.00...0.20 Rack travel mm Speed rpm : 400
Rack travel in mm : (6,7...8,1)
Del.quantity cm3/ : (5,0...13,0)
1000 s: -Measurement 1/min : 1000 Speed 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Vacuum hPa : 400 Remarks: Rack travel in m: 1.80...2.20 Start-of-delivery spacing (difference) FUEL DELIVERY CHARACTERISTICS between max/min value 10 cam angle maximum. 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 34.5...36.0 1000 s: (33.5...37.0) CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1100 allowable after switchover point (of starting cam) up to 1000 1/min. Speed : 2200 rpm Control-lever position 46.5°, control-rod travel deduction must be Del.quantity cm3/: 33.0...35.0 1000 s: (32.0...36.0) greater than 0.2 mm after switchover

point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 16.3...16.7°
(16.2...16.8°) angular displacement of
the cam after cylinder 1.

ADJUSTING ACTIVE BUCKING DAMPING (ARD) Control lever on full-load stop. At n = 1000 min -1 , I = 2.5 A, delivery (7.8...9.8) cm $\frac{3}{1000}$ strokes.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 2,5 H3 Test sheet Edition : 15.11.88 Replaces : 05.08.88 Test oil : ISO-4113

Combination no. : 0 400 075 951

Injection pump

Pump designation : PES5M55C32ORS170 EP type number : 0 410 055 977

Governor

Governor design. : RSF340/2300M60-20 Governer no. : 0 420 021 111

Customer-spec. information

Customer : DB

Engine : 0M602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10 : (1.95...2.15)
Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance $+ - ^{0}$: 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 6.8...7.0 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1

Spread 100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...33.0 1000 : (31.0...34.0)

: 2.50 cm3

Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,90...9,30

rpm : 2500 Speed 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Rack travel in mm: 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

L16

Speed rpm : 315 Rack travel in mm : 6.9	Spread cm3 : 2.50 1 1000 s: (3.00)
Testing: Speed rpm : 220 Minimum rack trave: 10.00 Speed rpm : 315	STARTING FUEL DELIVERY
Rack travel in mm : 6.807.00 Rack travel in mm : 2.50 Speed rpm : 640740 Speed rpm : 1000	Speed rpm : 100 Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
Maximum rack trave: 2.00	HIGH IDLE
SET IDLE AUXILIARY SPRING Speed rpm : 380 Rack travel in mm : 5,705,90 : (5,606,00)	I 1st version I Aneroid pressure h: 1100 I Speed rpm : 2500
TORQUE CONTROL Torque control curve - 1st version 1st speed	l Rack travel in mm : 8.909.30 l Del.quantity cm3/ : 22.026.0 l 1000 s: (21.027.0) l Spread cm3 : 2.50
Rack travel in m: 12.6012.70 2nd speed rpm : 1800	1 1000 s: (3.00)
Rack travel in m: 12.0012.20 3rd speed	LOW IDLE Speed rpm : 315
Aneroid/Altitude Compensator Test	Rack travel in mm : 6.807.00 Del.quantity cm3/ : 5.06.0 1000 s: (4.59.0) Spread cm3 : 1.00
1st version	1000 s: (1.50)
Setting Speed rpm : 1000	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
Pressure hPa : 950	
Rack travel mm : 0.000.20	Control lever at idle stop Speed rpm : 340
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000	<pre>Speed rpm : 340 Rack travel in mm : - Del.quantity cm3/ : - 1000 s: -</pre>
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1,8 Control lever at full-load stop Speed rpm: 2950
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1,8 Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1,8 Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1,8 Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 34.035.5	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1,8 Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/: -
Measurement Speed 1/min: 1000 1st pressure hPa: 900 Rack travel in m: 0.500.70 2nd pressure hPa: 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm: 1800 Del.quantity cm3/: 34.035.5 1000 s: (33.036.5) Spread cm3: 2.50 1000 s: (3.)	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: - 1000 s: - Current A: 1.8 Control lever at full-load stop Speed rpm: 2950 Rack travel in mm: 0,01,0 Current short-duration A: 3,0 Starting test Speed rpm: 100 Del.quantity cm3/: - min. 1000 s: 52,0
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 34.035.5 1000 s: (33.036.5) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/ : 33.535.5	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: -
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 1800 Del.quantity cm3/ : 34.035.5 1000 s: (33.036.5) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1100 Speed rpm : 2200	Speed rpm: 340 Rack travel in mm: - Del.quantity cm3/: -

to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 2,5 H4 Test sheet Edition : 15.11.88 Replaces : 05.08.88 Test oil : ISO-4113

Combination no. : 0 400 075 952

Injection pump

Pump designation : PESSM55C32ORS170 EP type number : 0 410 055 977

Governor

Governor design. : RSF350/2300MS6-5 Governer no. : 0 420 021 112

Customer-spec. information Customer

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10 : (1.95...2.15) Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.25

100 s: (0.3)

2nd speed rpm : 350.0 Rack travel in mm : 6.8...7.0 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100
Del.quantity : 32.0...33.0
1000 : (31.0...34.0)
Spread cm3 : 2.50
1000 : (3.00)

RATED SPEED

1st version

Control lever

_position degrees: 50...0 3rd rack travel in: 8,90...9,30

Speed rpm : 2500 4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm: 1,9...2,0

LOW IDLE 1 Control lever

position degrees: 11...15

Setting point w/out bumper spring

L19

Speed : 350 Lbw Rack travel in mm: 6.9 Testing: Speed rpm : 220 Minimum rack trave: 10.00 rpm : 350 Rack travel in mm : 6.80...7.00 Rack travel in mm: 2.50 rpm : 650...750 rpm : 1000 Speed Speed Maximum rack trave: 2.00 SET IDLE AUXILIARY SPRING rpm : 400 Speed Rack travel in mm : 5,70...5,90 : (5,60...6,00) TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.60...12.70 2nd speed rpm : 1800 Rack travel in m: 12.00...12.20 3rd speed rpm : 2200 Rack travel in m: 11.60...11.80 Aneroid/Altitude Compensator Test 1st version Pressure hPa : 950 Rack travel mm : 0.00...0.20 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 rpm : 1800 Speed Del.quantity cm3/: 34.0...255 1000 s: (33.0...36.5) Spread cm3 : 2.50 1000 s: (3.) Aneroid pressure h: 1100 : 2200 Speed rpm Del.quantity cm3/: 33.5...35.5 1000 s: (32.5...36.5) Spread cm3 : 2.50 1000 s: (3.00)

Speed rpm : 100 Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 20.10...0.00 HIGH IDLE 1st version Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.90...9.30 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) Spread cm3 : 2.501000 s: (3.00) LOW IDLE Speed rpm : 350 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) cm3 : 1.00 Spread 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA) Speed грт : 400 Rack travel in mm : (6,8...8,4) Del.quantity cm3/:-1000 s: (5,0...13,0) Vacuum hPa : 400 Remarks: Pin projection = 16.60...16.70 mm SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

STARTING FUEL DELIVERY

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 2,5 K5 : 15.11.88 Test sheet Edition Replaces : 05.08.88 Test oil : ISO-4113

Combination no. : 0 400 075 953

Injection pump

Pump designation : PESSM55C32ORS170 EP type number : 0 410 055 977 Governor Governor design. : RSF350/2300M71 Governer no.

: 0 420 021 113 Customer-spec. information

Customer : DB

Engine : 0M602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 20,00...22.00 Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-288

Tolerance + - 0 : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.25

100 s: (0.3)

rpm : 350.0 2nd speed Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1100 s: (0.15)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0) cm3 : 2.50 1000 : (3.00) Spread

RATED SPEED

1st version Control lever

position degrees: 50...0

3rd rack travel in: 8,90...9,30

Speed rpm : 2500 4th rack travel in: 2950

: 0.00...1.00 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Rack travel in mm: 1,9...2,0

LOW IDLE 1 Control lever

position degrees: 11...15

Setting point w/out bumper spring

L22

Rack travel in mm: 6.9 1000 s: (3.00) Testing: Speed rpm : 220 STARTING FUEL DELIVERY Minimum rack trave: 10.00 rpm : 350 Speed Rack travel in mm : 6.80...7.00 Speed rpm : 100 Rack travel in mm : 2.50 Del.quantity cm3/ : 52.0...0.0 rpm : 650...750 1000 s: (52.0...0.0) Speed rpm : 1000 Rack travel in mm : 20.10...0.00 Maximum rack trave: 2.00 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 400 1st version Rack travel in mm : 5,70...5,90 Aneroid pressure h: 1100 : (5,60...6,00) rpm : 2500 Speed Rack travel in mm : 8.90...9.30 TORQUE CONTROL Del.quantity cm3/: 22.0...26.0 Torque control curve - 1st version 1000 s: (21.0...27.0) 1st speed rpm : 1000 cm3 : 2.50 Spread Rack travel in m: 12.60...12.70 1000 s: (3.00) 2nd speed rpm : 1800 Rack travel in m: 12.00...12.20 LOW IDLE 3rd speed rpm : 2200 Rack travel in m: 11.60...11.80 rpm : 350 Speed Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 5.0...6.0 Aneroid/Altitude Compensator Test 1000 s: (4.5...9.0) Spread cm3 : 1.00 1000 s: (1.50) 1st version Setting SETTING PNUEUMATIC FAST IDLE Speed : 1000 rpm (ELA) Pressure hPa : 950 Rack travel mm : 0.00...0.20 Speed rpm : 400 Rack travel in mm : (6,80...8,40 Measurement Speed 1/min : 1000 Del.quantity cm3/: -1000 s: (5,0...13,0) 1st pressure hPa : 900 Vacuum hPa : 400 Rack travel in m: 0.50...0.70 2nd pressure hPa : 750 Remarks: Rack travel in m: 1.80...2.20 Pin projection = 16.60...16.70 mm FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 SETTING OF FBG Speed rpm : 1800
Del.quantity cm3/ : 34.0...35.5 -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). 1000 s: (33.0...36.5) Spread cm3 : 2.50 Cam angle according to cyl. 1. 1000 s: (3,) Aneroid pressure h: 1100 ; 2200 rpm Del.quantity cm3/; 33.5...35.5 1000 s: (32.5...36.5)

Spread

cm3 : 2.50

Start-of-delivery spacing (difference)

Speed

rpm : 350

between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 7,7 b Edition : 22.09.88 Replaces : 15.6.88 Test oil : ISO-4113 Combination no. : 0 400 076 727 Injection pump Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728 Governor Governor design.: RSV400...1100P2A534-Governer no. : 0 421 833 290 Customer-spec. information Customer : JOHN DEERE Engine : 6076AF 1st version kW : 160.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar : 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,6 : 1 680 750 008 Outside diameter

Test lines

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{0}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 400.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.8...2.3

100 s: (1.6...2.6) cm3 : 0.4

Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity : 135.0...137.0 1000 : (132.5...139.5)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.70

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1195...1205 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

грт : 400° Rack travel in mm: 4.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 4.80...5.00

Rack travel in mm : 2.00 rpm : 555...615 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.70...10.80

2nd speed rpm : 700

Rack travel in m: 12.00...12.20

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed ĥΡa :-Pressure

Rack travel mm : 9.90...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 470

Rack travel in m: 10.50...10.60

2nd pressure hPa : 605

Rack travel in m: 11.30...11.70

3rd pressure hPa : 900

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 700 Speed rpm

Del.quantity cm3/: 176.5...181.5 1000 s: (174.0...184.0)

Aneroid pressure h: -

Speed rpm : 500

L26

Del.quantity cm3/:-

1000 s: (127.0...137.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 18.5...23.5

1000 s: (16.0...26.0)

cm3 : 4.50 Spread

1000 s: (7.50)

:

Remarks:

Adjustment without torque-control spring retainer with 1 mm less Starting/full-load transition speed from holding magnet = 450 1/min. ntrol pring retainer. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1 BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: KHD 1 g 29 : 5.10.88 Test sheet Edition : 12.02.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 463 154

Injection pump

Pump designation : PES3A800410/3RS1350

EP type number : 0 410 483 023

Governor

Governor design. : RSV325...1175A8C2223

: 0 420 232 482 Governer no.

Customer-spec. information Customer : KHD

Engine : F3L912

1st version kW : 33.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp, OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 800 1st speed

Rack travel in mm : 10.20...10.50

Del.quantity cm3/: 4.8...4.9

100 s: (4.6...5.0)

Spread cm3 : 0.2

100 s: (0.4)

rpm : 325.0 2nd speed Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.7) cm3 : 0.2 Spread

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

: 48.0...49.0 Deliquantity 1000 : (46.5...50.5)

cm3 : 2.50Spread 1000 : (4.00)

RATED SPEED

1st version Control lever

position degrees; 52...60

Testing:

1st rack travel in: 8.10

Speed : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1240...1270 3rd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1420 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 15...23 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 5.8 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 rpm : 465...525 Speed TORQUE CONTROL 2nd speed rpm : 500 Rack travel in m: 10.60...10.70 3rd speed rpm : 800 Rack travel in m: 10.20...10.50 4th speed rpm : 1175 Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 1175
Del.quantity cm3/ : 46.0...50.0 1000 s: (44.0...52.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.10 rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Rack travel in mm : 17.00...17.30

Remarks:

: RENAULT

APPLICATION Tractor (tractor engines) BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 h1 Edition : 25.10.88 Replaces

: 11.85 : ISO-4113 Test oil

Combination no. : 0 400 676 186

Injection pump

Pump designation : PE6A95D32DRS2557

Governor

Governor design. : RSV400...1100A8C1117

-1R

Customer-spec. information Customer : HANOMAG

: D 963 N Engine

1st version kW : 110.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

MO1

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.35

100 s: (0.55)

rpm : 400.0 2nd speed Rack travel in mm : 8.0...8.2 Del.quantity cm3/ : 3.1...3.9

100 s: (2.3...4.1)

cm3 : 0.35 Spread 100 s: (0.55)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 8.90

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1365

Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 7.6

Testing:

Speed грт : 100 Minimum rack trave: 19.50 Speed rpm : 400 Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00 Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.90...10.00

2nd speed rpm : 500

Rack travel in m: 10.70...10.80 3rd speed rpm : 865

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 400 Speed

Del.quantity cm3/: 31.0...39.0 1000 s: (28.5...41.5) Spread cm3: 3.50

1000 s: (5.50)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1140....1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 122.0...132.0

1000 s: (119.0...135.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 4,0 a 2 Test sheet : 11.07.88 Edition Replaces : 16.10.87 Test oil : ISO-4113

Combination no. : 0 400 844 088

Injection pump

Pump designation : PES4A90D410RS2666 EP type number : 0 410 894 029

Governor

Governor design. : RQV300...1400AB1065-

10L

Governer no. : 0 420 212 203

Customer-spec. information

: DAIMLER-BENZ

Engine : 0M364

1st version kW : 66.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

: (2.20...2.40)

MO3

Rack travel in mm : 9.00...12.00 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - 0 : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 6.3...6.4

100 s: (6.1...6.6)

cm3 : 0.3Spread ------

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm: 8.6...8.8 Del.quantity cm3/: 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

rpm : 750 3rd speed

travel mm : 4.10...4.30

rpm : 1500 4th speed

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Deliquantity : 63.5...64.5 1000 : (61.5...66.5)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.90

rpm : 1440...1450 Speed 2nd rack travel in: 4,00 Speed rpm : 1545...1575 4th rack travel in: 1700

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 20...28

Testing:

Speed rpm : 100 Minimum rack trave: 10.20 rpm : 300

Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

rpm : 540...680 Speed

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.90...11.00

2nd speed rpm : 500

Rack travel in m: 11.90...12.00

3rd speed rpm : 700

Rack travel in m: 11.50...11.80

4th speed rpm : 900

Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) 1000 s: (5.)

rpm_ : 900 Speed

Del.quantity cm3/: 52.5...55.5 1000 s: (50.0...58.0)

BREAKAWAY

1st version imm rack travel less than

full load rack tr: 9.90

rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

MO4

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.60...17.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet s 1,7 s 1 : 14.10.88 Edition Phasing Replaces : 12.9.86 Test oil : ISO-4113 BASIC SETTING Combination no. : 0 400 876 263 1st speed Injection pump Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031 Governor Governor design. : RSV350...1300A0C1107 Governer no. : 0 420 232 415 Spread Customer-spec. information Customer : DAIMLER-BENZ Engine : 0M 352 2nd speed 1st version kW : 80.9 : 2600 Rated speed Spread TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar : 1.00 Test nozzle holder assembly : 0 ,681 343 009 Opening 1st version pressure, bar : 172...175 Speed Test lines : 1 680 750 014 Spread cm3 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. per values

: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) rpm : 1300 Rack travel in mm : 8.70...8.80 Del.quantity cm3/ : 5.0...5.1 100 s: (4.8...5.3) cm3 : 0.3100 s: (0.4) rpm : 350 Rack travel in mm : 6.60...7.20 Del.quantity cm3/ : 1.0...1.2 100 s: (0.8...1.4) cm3 : 0.2100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 4.00 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1300 Aneroid pressure h: 50.0. Del.quantity : ..51.0 1000 : (48.0...53.0) : 3.00 1000 : (4.50) position degrees: 62...70 Testing: 1st rack travel in: 7.70 Speed rpm : 1340...1345 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 4th rack travel in: 1550

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: ? Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.90 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 rpm : 485...545 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 8.70...8.80 2nd speed rpm : 500 Rack travel in m: 9.90...10.00 3rd speed rpm : 900 Rack travel in m: 9.10...9.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 47.5...49.5 1000 s: (45.0...52.0) Speed rpm : 900 Del.quantity cm3/: 50.0...53.5 1000 s: (48.0...56.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 7.70 rpm : 1340...1345 Speed STARTING FUEL DELIVERY Speed : 100 Low Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0,...91.0) Rack travel in mm : 14.80...15.20 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.60...7.20 Del.quantity cm3/: 10.0...12.0

1000 s: (8.0...14.0)

M06

Spread cm3 : 2.00 1000 s: (4.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks Test sheet : FIA 13,8 a Phasing : 0-60-120-180-240-300 Edition : 01.09.88 Replaces : 7.83 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 225 BASIC SETTING Injection pump Pump designation : PE6P120A720RS167 1st speed rpm : 1100 EP type number : 0 411 826 053 Governor Rack travel in mm : 11.10...11.20 Governor design. : RQ225/1100PA118R Governer no. : 0 421 801 027 Del.quantity cm3/: 17.0...17.3 Customer-spec. information 100 s: (16.7...17.6) Customer : FIAT Spread cm3 : 0.5Engine : 221 A 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 225.0 Rack travel in mm: 7.5...7.7 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1175 Opening : 7.50...7.70 travel mm pressure, bar : 207...210 2nd speed rpm : 1000 : 5.90...6.10 travel mm Orifice plate 3rd speed rpm : 500 travel mm : 5.90...6.10 4th speed rpm : 300 diameter mm : 0,8 travel mm : 2.80...3.40 Test lines : 1 680 750 067 5th speed rpm : 225 travel mm : 1.40...1.90 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 600 Speed Insp. values in parentheses Rack travel in mm : 15.60...16.40 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1100 : 170.0...173.0 Del.quantity : 2.00...2.10 Prestroke mm 1000 : (167.0...176.0) : (1.95...2.15) cm3 : 5.00Spread Rack travel in mm : 9.00...12.00 1000 : (9,00)

MO7

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.0

Testing:

1st rack travel in: 10.10

Speed rpm : 1145...1160 2nd rack travel in: 4.00

Speed rpm : 1190...1220 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 225 Rack travel in mm: 7.6

Testing:

Speed rpm : 100 Minimum rack trave: 9.10

Speed rpm : 225
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 365...405

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1145...1160

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : VAL 7,2 b Phasing : 0-60-120-180-240-300 Edition : 19.05.88 Replaces : 18.12.87 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 532 BASIC SETTING Injection pump Pump designation : PE6P110A320RS856 1st speed rpm : 700 EP type number : 0 411 816 170 Governor Rack travel in mm : 12.00...12.10 Governor design. : RQV250...1150PA825 Governer no. : 0 421 813 570 Del.quantity cm3/: 13.9...14.1 Customer-spec. information 100 s: (13.6...14.4) Customer : VALMET Spread cm3 : 0.4Engine : 612 DSJ 100 s: (0.7) 1st version kW : 165.0 : 2300 Rated speed rpm : 325.0 2nd speed Rack travel in mm: 6.1...6.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8) Test oil Spread cm3 : 0.3inlet temp. °C : 38...42 100 s: (0.6) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 325 Test nozzle holder : 2.00...2.10 travel mm assembly : 0 681 343 009 2nd speed rpm : 380 travel mm : 2.30...2.70 Opening 3rd speed rpm : 470 pressure, bar : 172...175 : 2.90...3.40 travel mm 4th speed rpm : 1200 travel mm : 8.10...8.20 Test lines : 1 680 750 015 5th speed rpm : 1310 travel mm : 9.10...9.40 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1240 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 700 Del.quantity : 139.0...141.0 1000 : (136.0...144.0) : 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

M09

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1290...1320 Speed

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 325

Testing:

Speed rpm : 100 Minimum rack trave: 7.70 Speed rpm : 325

Rack travel in mm : 6.10...6.30

CONSTANT REGULATION

Speed rpm : 325...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 700

: 12.00...12.10 Rack travel mm

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 415

Rack travel in m: 11.60...11.70

3rd pressure hPa : 270

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

1000 s: (100.0...108.0)

M10

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : ENA 10,1 a1 Phasing : 0-60-120-180-240-300 : 11.07.88 Edition Replaces Tolerance + - D : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 544A BASIC SETTING Injection pump Pump designation : PE6P100A820LS130 1st speed rpm : 1030 EP type number : 0 411 806 179 Governor Rack travel in mm : 11.70...11.80 Governor design. : RQ250/1050PA627-1 Governer no. : 0 421 801 407 Del.quantity cm3/: 11.3...11.5 Customer-spec. information 100 s: (11.1...11.7) Customer : ENASA cm3 : 0.3Spread Engine : 95A3Z 100 s: (0.6) 1st version kW : 132.0 Rated speed : 2100 rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Test oil cm3 : 0.3Spread inlet temp. OC : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -1 Inlet press., bar : 1.50 rpm : 600 Rack travel in mm : 15.60...16.40 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 Speed rpm : 1030 Del.quantity : 113.5...115.5 1000 : (111.5...117.5) cm3 : 3.50 Test lines : 1 680 750 015 Spread 1000 : (6,00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm : 600 per values Rack travel in mm : 16.0

Testing:

Speed

1st rack travel in: 10.70

2nd rack travel in: 4.00

Speed rpm : 1095...1110

rpm : 1140...1170

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 9.00...12.00

ack travel in mm; 9.00...12.00 | 4th rack travel in: 1250

M11

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.0

Testing:

Speed rpm: 100
Minimum rack trave: 7.50
Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 118.0...133.0 1000 s: (114.0...137.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : ENA 10,1 a2 Phasing : 0-60-120-180-240-300 Edition : 11.07.88 Replaces Tolerance + - D : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. Combination no. : 0 401 846 544B BASIC SETTING Injection pump Pump designation : PE6P100A820LS130 rpm : 900 1st speed EP type number : 0 411 806 179 Governor Rack travel in mm : 12.40...12.50 Governor design.: RQ250/1050PA627-1 Governer no. : 0 421 801 407 Del.quantity cm3/: 12.5...12.7 Customer-spec, information 100 s: (12.3...12.9) Customer : ENASA Spread cm3 : 0.3Engine : 9105.14 100 s: (0.6) 1st version kW : 147.0 Rated speed : 2100 rpm : 250.0 2nd speed Rack travel in mm : 7.9...8.1 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Test oil cm3 : 0.3Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -1 Inlet press., bar : 1.50 Speed rpm : 600 Rack travel in mm : 15.60...16.40 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 Speed rpm : 900 Del.quantity : 125.0...127.0 1000 : (123.0...129.0) cm3 : 3.50 Test lines : 1 680 750 015 Spread 1000 : (6,00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. rpm : 600 Speed per values Rack travel in mm : 16.0 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 11.40 Speed rpm : 1045...1060 Prestroke mm : 2.80...2.90 2nd rack travel in: 4.00 : (2.75...2.95)

Speed

4th rack travel in: 1200

rpm : 1105...1135

M13

Rack travel in mm : 9.00...12.00

Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring

Speed rpm: 175 Rack travel in mm: 5.0

Testing:

Speed rpm : 75 Minimum rack trave: 6.50 Speed rpm : 175 Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 rpm : 240...280 Speed

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900

Rack travel in m: 12.40...12.50

2nd speed rpm : 650

Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/: 126.0...131.0 1000 s: (123.5...133.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...155.0 1000 s: (136.0...159.0)

LOW IDLE

Speed rpm : 175

Rack travel in mm : 4.90...5.10

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : ENA 10,1 a3 Phasing Edition : 11.07.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 5440 BASIC SETTING Injection pump Pump designation : PE6P100A820L\$130 1st speed EP type number : 0 411 806 179 Governor Governor design. : RQ250/1050PA627-1 Governer no. : 0 421 801 407 Customer-spec. information Customer : ENASA Spread cm3 : 0.3Engine : 9105.45 100 s: (0.6) : 147.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil cm3 : 0.3Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -1 Inlet press., bar: 1.50 Speed rpm : 600 Test nozzle holder assembly : 0 681 343 009 Opening 1st version pressure, bar : 172...175 rpm : 1030 Speed Del quantity Test lines : 1 680 750 015 cm3 : 3.50 Spread 1000 Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm : 600 per values Rack travel in mm: 16.0

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

M15

: 1-5-3-6-2-4 : 0-60-120-180-240-300

rpm : 1030

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

: 101.0...103.0 1000 : (99.0...105.0)

: (6.00)

Testing:

1st rack travel in: 10.20

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1135...1165

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 175 Rack travel in mm: 5.0

Testing:

rpm : 75 Speed Minimum rack trave: 6.50

Speed rpm : 175
Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed rpm : 240...280

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 110.0...125.0 1000 s: (106.0...129.0)

LOW IDLE

Speed rpm : 175 Rack travel in mm : 4.90...5.10

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS firing order : 1-5-3-6-2-4 Note remarks Test sheet : ENA 10,1 a4 Phasing : 0-60-120-180-240-300 Edition : 11.07.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 544D BASIC SETTING Injection pump Pump designation : PE6P100A820LS130 1st speed rpm : 980 EP type number : 0 411 806 179 Governor Rack travel in mm : 12.00...12.10 Governor design. : RQ250/1050PA627-1 Governer no. : 0 421 801 407 Del.quantity cm3/: 11.6...11.8 Customer-spec. information 100 s: (11.4...12.0) Customer : ENASA Spread cm3 : 0.3Engine : 9501.08 100 s: (0.6) 1st version kW : 136.0 Rated speed : 2100 rpm : 250.0 2nd speed Rack travel in mm: 7.9...8.1 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 Test oil Spread inlet temp, °C : 38...42 100 s: (0.5) Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -1 Inlet press., bar : 1.50 rpm : 600 Rack travel in mm : 15.60...16.40 Test nozzle holder assembly : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 rpm : 980 Speed Del.quantity : 116.5...118.5 1000 : (114.5...120.5) Test lines : 1 680 750 015 cm3 : 3.50Spread 1000 : (6.00) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x1.50x600 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. rpm : 600 per values ____ Rack travel in mm: 16.0 BEGINNING OF DELIVERY Testing: Test pressure, bar: 25...27 1st rack travel in: 11.00 Speed rpm : 1045...1060 Prestroke mm : 2.80...2.90 2nd rack travel in: 4.00 : (2.75...2.95) Speed rpm : 1105...1135

4th rack travel in: 1200

Rack travel in mm : 9.00...12.00

M17

Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 175 Rack travel in mm: 5.0 Testing: Speed rpm : 75 Minimum rack trave: 6.50 Speed rpm : 175 Rack travel in mm: 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 240...280 TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 12.00...12.70 2nd speed rpm : 650 Rack travel in m: 12.70...12.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/: 122.0...128.0 1000 s: (120.0...130.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1045...1060 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...155.0 1000 s: (136.0...159.0) LOW IDLE Speed rpm : 175 Rack travel in mm : 4.90...5.10 Remarks: APPLICATION Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 a5 Edition : 11.07.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 544E Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RQ250/1050PA627-1 Governer no. : 0 421 801 407 Customer-spec. information Customer : ENASA Engine : 9100-14V23 1st version kW : 125.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

Spread cm3 : 0.3-----

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 128.5...130.5 Del.quantity 1000 : (126.5...132.5) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.50 Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1105...1135

4th rack travel in: 1200

M19

Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 175 Rack travel in mm: 5.0 Testing: Speed rpm : 75 Minimum rack trave: 6.50 Speed rpm : 175 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 240...280 TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 12.50...12.60 2nd speed rpm : 650 Rack travel in m: 12.90...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 650 Del.quantity cm3/: 123.0...128.0 1000 s: (120.5...130.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 Speed rpm : 1045...1060 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 148.0...164.0 1000 s: (144.0...168.0) LOW IDLE Speed rpm : 175 Rack travel in mm : 4.90...5.10 Remarks: APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 10,1 a6 Edition : 11.07.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 544F Injection pump Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179 Governor Governor design. : RQ250/1050PA627-1 Governer no. : 0 421 801 407 Customer-spec. information Customer : ENASA : 9107.V3 Engine 1st version kW : 127.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. OC : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar : 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.80...2.90 Prestroke mm : (2.75...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance $+ - \circ : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 980 Rack travel in mm : 11.30...11.40 Del.quantity cm3/: 10.4...10.6 100 s: (10.2...10.8) Spread cm3 : 0.3 -----100 s: (0.6) 2nd speed rpm : 250.0 Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Rack travel in mm : 15.60...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 980 : 104.0...106.0 Del.quantity 1000 : (102.0...108.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Setting point: rpm : 600 Rack travel in mm : 16.0 Testing: 1st rack travel in: 10.30 Speed rpm : 1045...1060 2nd rack travel in: 4.00 Speed rpm : 1100...1130

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.0

Testing:

Speed rpm: 100
Minimum rack trave: 7.50
Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.30 Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...135.0 1000 s: (116.0...139.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10.1 d
Edition : 23.09.88
Replaces : 25.3.88
Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump

Pump designation : PE6P100A820LS503 EP type number : 0 411 806 197

Governor

Governor design. : RQV250...1000PA811

Governer no. : 0 421 813 556

Customer-spec. information Customer : ENASA

Engine : 95 T1 AX,BX

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{0}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm: 1140

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 900

Del.quantity : 165.0...167.0

(1000 : (163.0...169.0)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 13.20

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 250

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 250...350

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 14.20...14.30 2nd speed rpm : 700

Rack travel in m: 14.70...14.90

3rd speed rpm : 850 Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 900 Speed rom Pressure

Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20

3rd pressure hPa : 300 Rack travel in m: 13.40...13.60

START CUT-OUT

1/min : 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700
Del.quantity cm3/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 180.0...200.0

1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11.9 a1 Edition : 19.05.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 550 Injection pump Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075 Governor Governor design. : RQV250...1050PA808 Governer no. : 0 421 813 553 Customer-spec. information Customer : ENASA : 96 T1 CX Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00

firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{0}$: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 250

travel mm : 1.00...1.40 2nd speed rpm : 350

travel mm : 1.70...2.30 3rd speed rpm : 700 travel mm : 4.50...5.10

4th speed rpm : 1095 travel mm ; 8.20...8.40

5th speed rpm : 1175 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed Aneroid pressure h: 900

Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

M25

Spread cm3 : 5.001000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 rpm : 250

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

rpm : 250...370 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed

rpm : 500 Pressure hPa : 900

Rack travel mm : 10.90...11.00

Measurement

Speed 1/min : 500

1st pressure bea : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 510

Rack travel in m: 10.40...10.50

3rd pressure hPa : 300

Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 650

Del.quantity cm3/: 187.0...193.0 1000 s: (184.0...196.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm: 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION Special-purpose vehicle BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: ENA 11,9 f Test sheet Edition : 19.05.88 Replaces : 12.2.88 Test oil : ISO-4113

: 0 401 846 551 Combination no.

Injection pump

Pump designation : PE6P110A320RS263-1 EP type number : 0 411 816 175

Governor

Governor design. : RQ250/1000PA218-2 Governer no. : 0 421 801 411

Customer-spec. information Customer : ENASA

Engine : 96 T4 AY

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd sp聲 rpm : 250.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position Degree: -1

rpm : 600

Speed Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 160.0...162.0

1000 : (157.0...165.0) cm3 : 4.00

Spread 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.0

Testing:

1st rack travel in: 10.40

rpm : 1045...1060 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1200

Speed

rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.0

Testing:

Speed ~ rpm : 100 Minimum rack trave: 7.50 Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 e Edition : 24.06.88 Replaces : 25.3.88 Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump

Pump designation : PE6P100A820LS503-1 EP type number : 0 411 806 198

Governor

Governor design, : RQ250/1000PA352-1 Governer no. : 0 421 801 412

Customer-spec. information Customer : ENASA

Engine : 95 T1 AZ,CZ

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.85...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.3Spread

100 s: (0,6)

rpm : 250.0 2nd speed Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 600

Rack travel in mm : 15.60...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 900

Del.quantity : 165.U...107.0 1000 : (163.0...169.0) 1000 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 13.20 Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumbor spring

NO1

Speed rpm : 250 Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00 Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 14.20...14.30

2nd speed rpm : 700

Rack travel in m: 14.90...15.20

3rd speed rpm : 825

Rack travel in m: 14.40...14.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20

3rd pressure hPa : 300

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm_ : 700 Del.quantity cm3/: 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20

rpm : 1045...1060

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : STE 9.7 f : 19.05.88 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 555 BASIC SETTING Injection pump Pump designation : PE6P110A720RS516 rpm : 1100 1st speed EP type number : 0 411 816 176 Governor Rack travel in mm : 14.40...14.50 Governor design. : RQV250...1100PA413-3 Governer no. : 0 421 813 695 Del.quantity cm3/: 14.2...14.4 Customer-spec. information 100 s: (13.9...14.7) Customer : STEYR Spread cm3 : 0.4Engine : WD615.64 100 s: (0.7) 1st version kW : 175.0 Rated speed rpm : 250.0 : 2200 2nd speed Rack travel in mm: 6.4...6.6 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.9...2.4 100 s: (1.6...2.6) cm3 : 0.4 100 s: (0.7) Test oil Soread inlet temp. °C : 38...42 Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar : 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Test nozzle holder travel mm : 0.90...1.30 : 0 681 343 009 assembly 2nd speed rpm : 350 travel mm : 1.70...2.30 Opening 3rd speed rpm : 650 pressure, bar : 172...175 travel mm : 4.00...4.60 4th speed rpm : 1150 travel mm : 8.40...8.60 Test lines : 1 680 750 015 5th speed rpm : 1250 travel mm : 9.60...10.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1175 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1100 Aneroid pressure h: 900

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

Prestroke mm

: 2.80...2.90

Rack travel in mm : 9.00...12.00

: (2.75...2.95)

Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 45...53 Testing: 1st rack travel in: 13.40 Speed rem : 1140...1150 2nd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 250 Rack travel in mm : 6.40...6.60 CONSTANT REGULATION Speed rpm : 250...370 TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 14.40...14.50 2nd speed rpm : 700 Rack travel in m: 15.60...15.80 3rd speed rpm : 1000 Rack travel in m: 14.60...14.80 4th speed rpm : 860 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 900 Rack travel mm : 15.60...15.80 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 12.90...13.10 2nd pressure hPa : 575 Rack travel in m: 15.00...15.10 3rd pressure hPa : 310

Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 700 Speed

Del.quantity cm3/: 160.0...164.0

1000 s: (157.0...167.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 116.0...118.0 1000 s: (113.0...121.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 175.0...195.0 1000 s: (171.0...199.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 19.0...24.0

1000 s: (16.5...26.5) Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DAF 11,6 y9 Phasing : 0-60-120-180-240-300 Edition : 02.09.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 401 846 556 1st speed rpm : 650 Injection pump Pump designation : PE6P120A320RS415-1 Rack travel in mm : 11.10...11.20 EP type number : 0 411 826 123 Governor Del.quantity cm3/: 17.1...17.3 Governor design. : RQ250/1100PA417-10 Governer no. : 0 421 801 445 100 s: (16.8...17.6) Customer-spec. information cm3 : 0.5Spread Customer : DAF 100 s: (0.9) Engine : DKV 1160 rpm : 250.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 Test oil 100 s: (1.1...2.3) inlet temp. OC : 38...42 cm3 : 0.8 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar : 1.50 Degree: -1 rpm : 550 Test nozzle holder Rack travel in mm : 15.20...16.40 : 1 688 901 019 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version Speed rpm : 650 Orifice plate Aneroid pressure h: 700 Del.quantity : 171.0....176.0) diameter mm : 0,8 cm3 : 5.00Spread Test lines : 1 680 750 067 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness x Length mm : 6.00x1.50x1000 1st version (A) Injection pump setting values Setting point: Insp. values in parentheses Speed rpm : 550 Set equal delivery quant. Rack travel in mm: 15.8 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 9.10 Test pressure, bar: 25...27 rpm : 1130...1145 Speed 2nd rack travel in: 4.00 Prestroke mm : 2.80...2.90 rpm : 1180...1210 Speed : (2.75...2.95) 4th rack travel in: 1300 Rack travel in mm : 9.00...12.00 rpm : 0.00...1.00 Speed

NOS

LOW IDLE 1 Setting point w/out bumper spring rpm : 250° Rack travel in mm: 6.3 Testing:

Speed rpm : 100 Minimum rack trave: 7.20 rpm : 250 Rack travel in mm : 6.20...6,40 Rack travel in mm : 2.00 Speed

rpm : 440...480

TORQUE CONTROL Dimension a mm : 0.68 Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 11.50...11.70 2nd speed rpm : 1085 Rack travel in m: 10.10...10.30 3rd speed rpm : 750 Rack travel in m: 11.00...11.20 4th speed rpm : 825

Rack travel in m: 10.60...10.90

Aneroid/Altitude Compensator Test

1st version Setting Speed rpm : 600 hPa : 700 Pressure Rack travel mm : 11.10...11.20

Measurement 1/min : 600

Speed

1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 290 Rack travel in m: 10.70...10.90

3rd pressure hPa : 260 Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 Speed rpm : 1085 Del.quantity cm3/: 158.0...162.0 1000 s: (155.0...165.0) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 129.0...131.0 1000 s: (126,0...134.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.10 Speed rpm : 1130...1145

STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 320.0...360.0 1000 s: (320.0...360.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.20...6.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DAF 11,6y10 Phasing : 0-60-120-180-240-300 Edition : 05.08.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 401 846 557 1st speed rpm : 650 Injection pump Pump designation : PE6P120A320RS415-1 Rack travel in mm : 11.10...11.20 EP type number : 0 411 826 123 Governor Del.quantity cm3/: 17.1...17.3 Governor design. : RQ250/1100PA417-11 Governer no. ` : 0 421 801 446 100 s: (16.8...17.6) Customer-spec. information Spread cm3 : 0.5Customer 100 s: (0.9) Engine : DKV 1160 rpm : 250.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.4...2.0 Test oil 100 s: (1.1...2.3) inlet temp. OC cm3 : 0.8 : 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -1 rpm : 550 Test nozzle holder Rack @avel in mm : 15.20...16.40 : 1 688 901 019 assembly FULL LOAD DELIV, AT FULL LOAD STOP Opening pressure, bar : 207...210 1st version Speed rpm : 650 Orifice plate Aneroid pressure h: 700 diameter mm : 171.0...173.0 1000 : (168.0...176.0) : 0,8 Deloquantity : 5.00 Spread cm3 Test lines : 1 680 750 067 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness x Length mm : 6.00x1.50x1000 1st version (A) Injection pump setting values Setting point: Insp. values in parentheses Speed rpm : 550 Set equal delivery quant. Rack travel in mm: 15.8

per values _____ Testing: BEGINNING OF DELIVERY 1st rack travel in: 9.10 Test pressure, bar: 25...27 rpm : 1130...1145 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Speed rpm : 0.00...1.00 **NO7**

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.3

Testing:

Speed rpm : 100 Minimum rack trave: 7.20 Speed rpm : 250

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...480

TORQUE CONTROL

Dimension a mm : 0.63

Torque control curve - 1st version

1st speed rpm : 550 Rack travel in m: 11.40...11.50

2nd speed rpm : 1085

Rack travel in m: 10.10...10.30

3rd speed rpm : 750

Reck travel in m: 11.00...11.20

4th speed rpm : 825

Rack travel in m: 10.60...10.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 Pressure hPa : 700

Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 290

Rack travel in m: 10.70...10.90

3rd pressure hPa : 260

Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 1085 Speed

Del.quantity cm3/: 158.0...162.0

1000 s: (155.0...165.0)

Aneroid pressure h: -

Speed rpm_ : 600

Del.quantity cm3/ : 129.0...131.0

1000 s: (126.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 320.0...360.0 1000 s: (320.0...360.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

APPLICATION

0mn ibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 e10 Edition : 05.08.88

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 736

Injection pump

Pump designation : PE6P12OA320LS3810-10

EP type number : 0 411 826 734

Governor

Governor design. : RQV350...1150PA553

: 0 421 813 278 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M421A

1st version kW : 198.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15) Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasing : 0-45-120-165-240-285

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.3) cm3 : 0.8

Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1130 Speed

: 172.0...174.0 Del.quantity 1000 : (169.0...177.0)

cm3 : 5.00

Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.50

NO9

Speed rpm : 1170...1180

2nd rack travel in: 4.00

Speed rpm : 1245...1275 4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 Speed rpm : 350 Rack travel in mm : 4.60,..4.80

CONSTANT REGULATION

rpm : 385...505 Speed

START CUT-OUT

1/min : 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Remarks:

APPLICATION Pistenbully

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Note remarks Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1 Test sheet : MB 11,0 m 2 Edition : 05.08.88 Replaces Test oil : ISO-4113 Phasing : 0-45-120-165-240-285 Combination no. : 0 401 846 741 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P110A320L\$3814-10 EP type number : 0 411 816 741 BASIC SETTING Governor Governor design. : RQV350...1150PA378-5 1st speed rpm : 1150 Governer no. : 0 421 813 618 Rack travel in mm : 12.70...12.80 Customer-spec. information Customer : DAIMLER-BENZ Del.quantity cm3/: 13.4...13.6 Engine : 0M421 100 s: (13.1...13.8) 1st version kW : 159.0 Spread cm3 : 0.4 Rated speed : 2300 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 8.2...8.4 Del.quantity cm3/ : 1.3...1.9 Test oil inlet temp. OC : 38...42 100 s: (1.0...2.1) Overflow valve cm3 : 0.4 Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar : 1.50 GUIDE SLEEVE POSITION Control-lever position Overflow Degree: -1 rpm : 1150 quantity min. 1/h: 100...120 Speed Rack travel in mm : 15.20...17.80 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening 1st version pressure, bar : 172...175 Speed rpm : 1150 : 134,0...136.0 Del.quantity 1000 : (131.5...138.5) Test lines : 1 680 750 015 : 4.00 Spread cm3 1000 : (8.00) Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 62...70 Set equal delivery quant. per values Testing: 1st rack travel in: 11.70 BEGINNING OF DELIVERY Speed rpm : 1180...1190 Test pressure, bar: 25...27 2nd rack travel in: 4.00 rpm : 1285...1315 Speed

4th rack travel in: 1400 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 12...20 Testing: rpm : 100 Speed

Minimum rack trave: 8.50 Speed rpm : 350

Rack travel in mm : 8.20...8.40

Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 375...485 Speed

START CUT-OUT

Speed 1/min: 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/: 113.0...117.0 1000 s: (110.0...120.0)

cm3 : 6.00

Spread 1000 s: (9.00)

Speed rpm : 1150

Del.quantity cm3/: 93.0...97.0 * 1000 s: (90.0...100.0)

Spread cm3 : 6.00 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

* = Set at reduced-delivery stop.

Adjust stop lever to 0.5...1.0 mm before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.60...2.70 : (2.55...2.75) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : VOL 12,0 k : 01.09.88 Edition : 24.7.87 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 772 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32OR\$3118 EP type number : 0 411 826 726 BASIC SETTING Governor Governor design. : RQV250...1025PA657 1st speed rpm : 700 Governer no. : 0 421 813 368 Rack travel in mm : 13.30...13.40 Customer-spec. information Customer : VOLVO Del.quantity cm3/: 23.8...24.0 : TD 121 F Engine 100 s: (23.5...24.3) 1st version kW : 282.4 Spread cm3 : 0.5Rated speed : 2050 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0
Rack travel in mm : 3.3...3.5
Del.quantity cm3/ : 1.8...2.3
100 s: (1.5...2.5)
Spread Test oil inlet temp. °C : 38...42 Overflow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar : 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL 1st speed rpm : 250 Opening : 1.10...1.30 travel mm pressure, bar : 207...210 2nd speed rpm : 500 ravel mm : 4.10...4.90
3rd speed rpm : 700 Orifice plate diameter mm : 0,8 travel mm : 6.30...6.70 4th speed rpm : 900 travel mm : 6.30...6.70 Test lines rpm : 1025 : 1 680 750 067 5th speed travel mm : 7.30...7.90 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 rpm : 1080 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 700 Aneroid pressure h: 1200

N13

Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Del.quantity : 238.5...240.5 1000 : (235.5...243.5)

: 5.00 Spread Cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.30 rpm : 1085...1095 Speed 2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed rpm : 100 Minimum rack trave: 4.80 rpm : 250 Speed

Rack travel in mm : 3.30...3.50

Rack travel in mm : 2.00

Speed rpm : 285...345

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 1200

Rack travel mm : 13.30...13.40

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.80

2nd pressure hPa : 780

Rack travel in m: 13.10...13.20

3rd pressure hPa : 100

Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 139.0...141.0

1000 s: (136.0...144.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 240.0...280.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.30...3.50 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : SCA 9,0 e 2 : 01.07.88 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces : 2.11.87 Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 803 BASIC SETTING Injection pump Pump designation : PE6P120A320RS3141 1st speed rpm : 700 EP type number : 0 411 826 744 Governor Rack travel in mm : 9.30...9.40 Governor design. : RQV200...1100PA729 Governer no. : 0 421 813 469 : 0 421 813 469 Del.quantity cm3/: 11.7...11.9 Customer-spec. information 100 s: (11.4...12.2) Customer : SAAB-SCANIA Spread cm3 : 0.5Engine : DN 901 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 225.0 Test oil Rack travel in mm: 5.4...5.6 inlet temp. OC : 38...42 Del.quantity cm3/: 1.5...1.9 100 s: (-) Overflow valve Spread cm3 : 0.3: 1 417 413 025 100 s: (0.6) Inlet press., bar : 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 225 Opening : 0.50...0.90 travel mm : 207...210 pressure, bar 2nd speed rpm : 350 travel mm : 2.20...2.80 Orifice plate 3rd speed rpm : 650 diameter mm : 0.8 travel mm : 4.90...5.50 4th speed rpm : 1145 travel mm : 8.40...8.60 Test lines : 1 680 750 015 5th speed rpm : 1225 : 9.00...9.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6,00x1,50x600 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1120 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant, per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700

Del.quantity

Spread

cm3

: 117.0...119.0

1000 : (114.0...122.0)

: 5.00

1000 : (8.00)

N15

Prestroke mm

: 5.00,..5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 8.30

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 5...13

Testing:

Speed rpm : 100 Minimum rack trave: 6.20

Speed rpm : 225 Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00

Speed rpm : 300...360

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 124.0...132.0

1000 s: (122.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 290.0...340.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania 1987-01-08 Engine start of delivery: 180 BTDC

Firing sequence of engine: 1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : SCA 9.0 e : 01.07.88 Test sheet Phasing : 0-60-120-180-240-300 Edition : 12.9.86 : ISO-4113 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil Time to cyl. no. : 1 Combination no. : 0 401 846 804 BASIC SETTING Injection pump Pump designation : PE6P120A320RS3141 rpm : 700 1st speed EP type number : 0 411 826 744 Governor Rack travel in mm : 10.40...10.50 Governor design. : RQV200...1100PA729-1 Governer no. : 0 421 813 470 Del.quantity cm3/: 13.6...13.8 Customer-spec. information 100 s: (13.3...14.1) Customer : SAAB-SCANIA Spread cm3 : 0.5 : DS9 02 Engine 100 s: (0.8) TEST BENCH REQUIREMENTS 2nd speed rpm : 225.0 Test oil Rack travel in mm: 4.7...4.9 inlet temp. °C : 38...42 Del.quantity cm3/: 1.1...1.5 100 s: (-) Overflow valve cm3 : 0.3 Spread : 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 225 Opening travel mm : 0.50...0.90 pressure, bar : 207...210 2nd speed rpm : 350 : 2.20...2.80 travel mm Orifice plate 3rd speed rpm : 650 diameter mm : 0.8 : 4.90...5.50 travel mm 4th speed rpm : 1145 : 8.40...8.60 travel mm Test lines : 1 680 750 015 5th speed rpm : 1250 travel mm : 9.30...9.70 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1120 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 700 Del.quantity : 136.0...138.0 1000 : (133.0...141.0)

Spread cm3 : 5.00 1000 : (8.00)

N17

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9,00...12.00

: 5.00...5.10

: (4.95...5.15)

RATED SPEED

1st version Control lever

position degrees: 59...67

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1235...1265 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 3...11

Testing:

rpm : 100 Speed

Minimum rack trave: 5.90 Speed rpm : 225

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

Speed rpm : 290...350

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 140.0...148.0 1000 s: (138.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 290.0...340.0

1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4,40...4.60

Remarks:

N18

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on December 18, 1986

Start of delivery - engine: 170 before

Firing sequence of engine: 1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.60...2.70 : (2.55...2.75) Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 Test sheet : PEN 12,1 a Edition : 04.11.88 Replaces : 12.9.86 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 811 Tolerance + - 0 : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32OR\$3148 EP type number : 0 411 826 746 BASIC SETTING Governor Governor design. : RQ750PA783 1st speed rpm : 700 Governer no. : 0 421 801 334 Rack travel in mm : 12.30...12.40 Customer-spec. information Customer : VOLVO-PENTA Del.quantity cm3/: 25.5...25.7 Engine : TJD121KG 100 s: (25.2...26.0) 1st version kW : 246.0 Spread cm3 : 0.5Rated speed : 1500 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.5...2.0 Test oil inlet temp. OC : 38...42 100 s: (-) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar : 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder 1st version : 1 688 901 019 assembly rpm : 700 Speed : 255.0...257.0 1000 : (252.0...260.0) Del.quantity Opening pressure, bar : 207...210 Spread cm3 : 5.00 1000 : (9,00) Orifice plate diameter mm : 0.8 RATED SPEED 1st version Test lines : 1 680 750 015 Testing: Outside diameter

1st rack travel in: 11.30 Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm : 776...789 4th rack travel in: 850

rpm : 0.00...1.00 Speed

BREAKAWAY

1st version

N19

x Wall thickness x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values

Set equal delivery quant.

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Insp. values in parentheses

1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 750...755

STARTING FUEL DELIVERY

Remarks:

APPLICATION Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : VOL 10,0 u Phasing : 0-60-120-180-240-300 : 04.11.88 Edition : 7.1.88 Replaces Tolerance + - 0 : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. Combination no. : 0 401 846 850 BASIC SETTING Injection pump Pump designation : PE6P110A320RS3197 1st speed rpm : 700 EP type number : 0 411 816 752 Governor Rack travel in mm : 11.00...11.10 Governor design. : RQV300...1100PA232-3 Governer no. : 0 421 813 639 Del.quantity cm3/ : 15.0...15.2 Customer-spec. information 100 s: (14.7...15.5) Customer : VOLVO-BM Spread cm3 : 0.4Engine : TD102 100 s: (0.7) 1st version kW : 196.0 : 2200 Rated speed 2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 TEST BENCH REQUIREMENTS Del.quantity cm3/ : 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.3 Test oil Spread inlet temp. OC : 38...42 100 s: (0.6) Overflow valve (B) Setting of injection pump : 1 417 413 025 with governor Inlet press., bar : 1.50 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Test nozzle holder travel mm : 1.40...1.60 : 0 681 343 009 assembly rpm : 350 2nd speed : 1.70...2.30 travel mm Opening 3rd speed rpm : 700 pressure, bar : 172...175 travel mm : 4.40...5.00 4th speed rpm : 1165 : 8.70...8.90 travel mm Test lines : 1 680 750 015 5th speed rpm : 1255 travel mm : 9.60...10.00 Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1150 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values ____ FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 900 Prestroke mm : 3.50...3.60 Del.quantity : 150.0...152.0 1000 : (147.0...155.0) : (3.45...3.65) Rack travel in mm : 9.00...12.00

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Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 43...51 Testing: 1st rack travel in: 10.00 Speed rpm : 1160...1170 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 9...17 Testing: Speed rom : 100 Minimum rack trave: 5.50 Speed rpm : 300 Rack travel in mm : 3.90...4.10 CONSTANT REGULATION Speed rpm : 300...400 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 900 Rack travel mm : 11,00,...11.10 Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 300 Rack travel in m: 10.80...10.90 3rd pressure hPa : 170 Rack travel in m: 9.80...10.00 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 118.5...121.5 1000 s: (116.0...124.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00 Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...190.0 1000 s: (146.0...194.0)

LOW IDLE

Remarks:

Speed rpm : 300 Rack travel in mm : 3.90...4.10 Del.quantity cm3/ : 16.0...20.0 1000 s: (13.5...22.5)

:

Spread cm3 : 3.00 1000 s: (6.00)

APPLICATION Loading machine

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8peed

1st version

Aneroid pressure h: 900

Aneroid pressure h: -

Speed rpm : 1000 Del.quantity cm3/ : 144.0...148.0 1000 s: (142.0...150.0)

rpm : 700

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 u1 : 04.11.88 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 850E

Injection pump

Pump designation : PE6P110A320RS3197

EP type number : 0 411 816 752

Governor

Governor design. : RQV300...1100PA232-3

Governer no. : 0 421 813 639

Customer-spec. information Customer : VOLVO-BM

Engine : TD102

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.6...2.0

100 s; (1.3...2.2)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.40...1.60 travel mm

2nd speed rpm : 350

travel mm : 1.70...2.30 3rd speed rpm : 700

travel mm : 4.40...5.00

4th speed rpm : 1165

travel mm : 8.70...8.90

5th speed rpm : 1255

travel mm : 9.60...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 169.0...171.0 1000 : (166.0...174.0)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.50

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm : 100 Minimum rack trave: 5.50 Speed rpm : 300

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Fressure hPa : 900

Rack travel mm : 12.50...12.60

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 655

Rack travel in m: 12.30...12.40

3rd pressure hPa : 255

Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 700 Del.quantity cm3/ : 114.5...117.5 1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...190.0

1000 s: (146.0...194.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5) cm3 : 3.00

Spread

1000 s: (6.00)

Remarks:

APPLICATION

Loading machine

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 c Edition : 05.08.88 Replaces : 7.3.88 Test oil : ISO-4113

Combination no. : 0 401 846 860

Injection pump

Pump designation : PE6P120A320RS3200 EP type number : 0 411 826 766

Governor

Governor design. : RQV250...1000PA808-1

Governer no. : 0 421 813 660

Customer-spec. information Customer : ENASA

: 96 R1 BX Engine

1st version kW : 265.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm ; 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm : (3.75...3.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 0 : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mrm : 3.3...3.7 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

cravel mm : 1.00...1.40 2nd speed rpm : 350

travel mm : 1.70...2.30

3rd speed rpm : 700

travel mm : 4.70...5.30

4th speed rpm : 1045 travel mm : 8.00.

: 8.00...8.20 5th speed rpm : 1135

travel mm : 9.10...9.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1200 Del, quantity : 249.0...251.0 1000 : (246.0...254.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.90

rpm : 1050...1060 Speed 2nd rack travel in: 4.00

rpm : 1130...1160 Speed 4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 100 rpm Minimum rack trave: 5.00 Speed rpm : 250
Rack travel in mm : 3,30...3.70

CONSTANT REGULATION

rpm : 250...330 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 1200

Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8,50...8.90

2nd pressure hPa : 680

Rack travel in m: 11.30...11.40

3rd pressure hPa : 420

Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 900

Del.quantity cm3/: 240.0...246.0

1000 s: (237.0...249.0)

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Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 149.0...152.0 1000 s: (146.5...154.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...180.0 1000 s: (156.0...184.0) Rack travel in mm: 19.50...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : ENA 11,9 e : 11.07.88 Edition : 7.3.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 861 Injection pump Pump designation : PE6P120A320RS3176-1 EP type number : 0 411 826 767 Governor Governor design. : RQV250...1050PA808 Governer no. : 0 421 813 553 Customer-spec. information Customer : ENASA Engine : 96 R1 AX TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar : 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

Phasing : 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm : 650 Rack travel in mm : 12.40...12.50 Del.quantity cm3/: 21.2...21.4 100 s: (20.9...21.7) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 4.2...4.4 Del.quantity cm3/ : 2.5...3.1 100 s: (2.2...3.4) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.00...1.40 travel mm rpm : 350 2nd speed travel mm : 1.70...2.30 3rd speed rpm : 700 travel mm : 4.50...5.10 4th speed rpm : 1095 travel mm : 8.20...8.40 5th speed rpm : 1195 travel mm : 9.40...9.80 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1110 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 650 Aneroid pressure h: 900 Del.quantity : 212.0...214.0 1000 : (209.0...217.0)

: 1-5-3-6-2-4

Firing order

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.80...3.90

: (3.75...3.95)

Spread cm3 : 5.001000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 6...14

Testing:

Speed rpm : 100 Minimum rack trave: 5.90 Speed rpm : 250

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude Compensator Test

1st version

Setting Speed T rpm : 500 Pressure hPa : 900

Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.30
2nd pressure hPa : 390
Rack travel in m: 11.90...12.00
3rd pressure hPa : 160

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1030 Speed rpm

Del.quantity cm3/: 215.0...221.0 1000 s: (212.0...224.0)

Aneroid pressure h: -

Speed rpm : 500

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Del.quantity cm3/: 151.0...153.0

1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Special-purpose vehicle